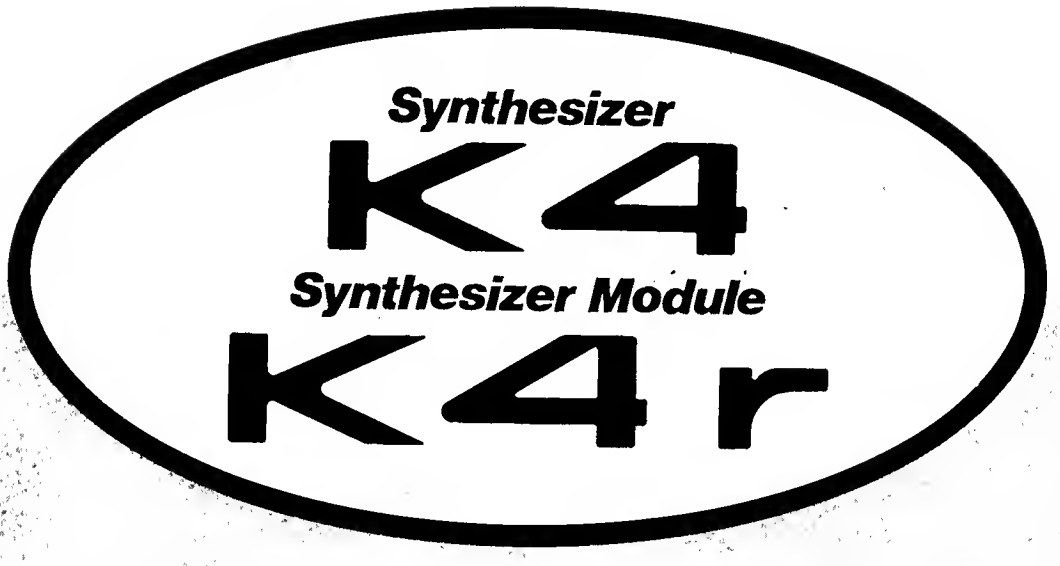
# KAWAI




*Owner's Manual*

1

# INTRODUCTION

Thank you for purchasing the Kawai K4/K4r synthesizer. This revolutionary new synthesizer uses 16-bit sampled and synthesized waveforms for optimum sound quality. The friendly user-interface and parameter structure of the Kawai K series has been retained, and new functions and features added to increase the K4/K4r is music making power.

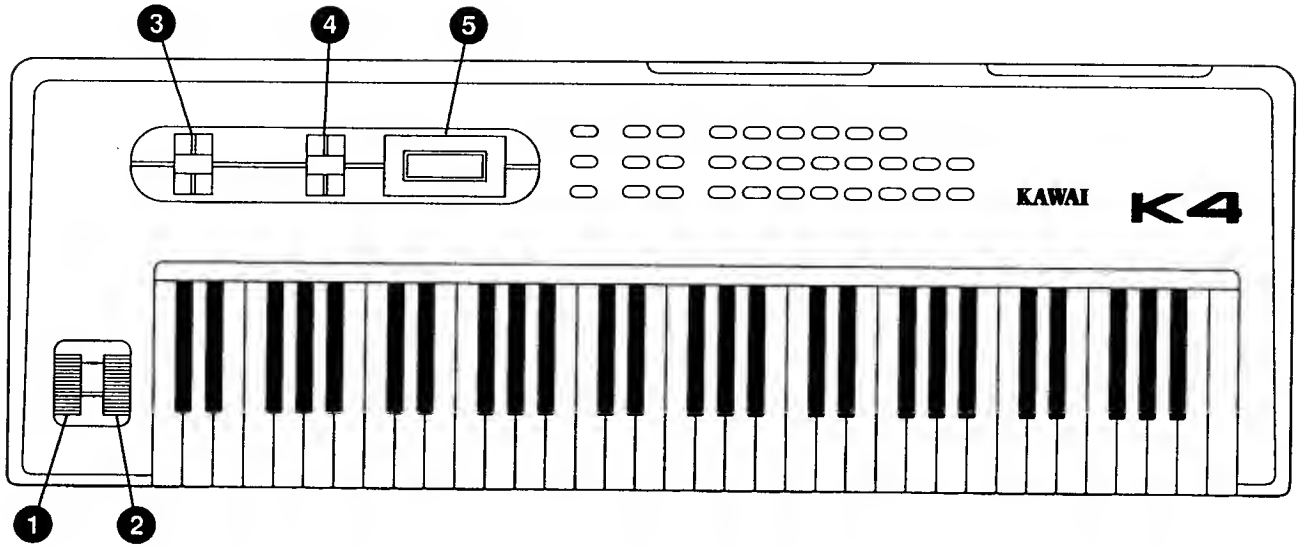
Please read this manual thoroughly before using the K4/K4r. It has been written to allow you to get the most out of the instrument's capabilities with the least amount of effort.


1

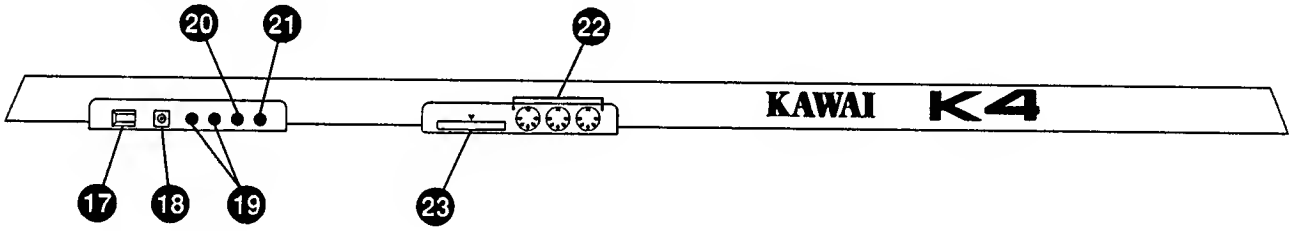
4

# ■ K4 PANEL LAYOUT

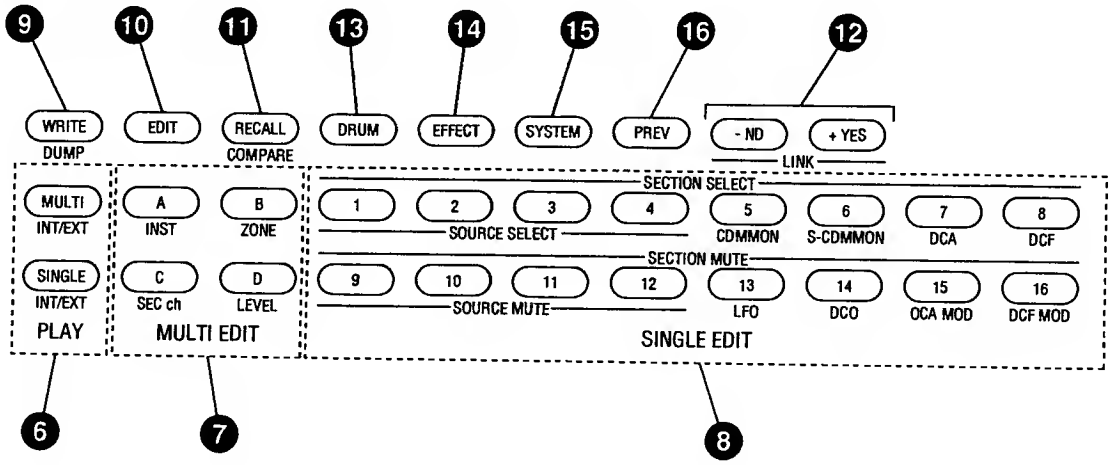
## [FRONT VIEW]




## [REAR VIEW]




## [CONTROL SWITCHES]

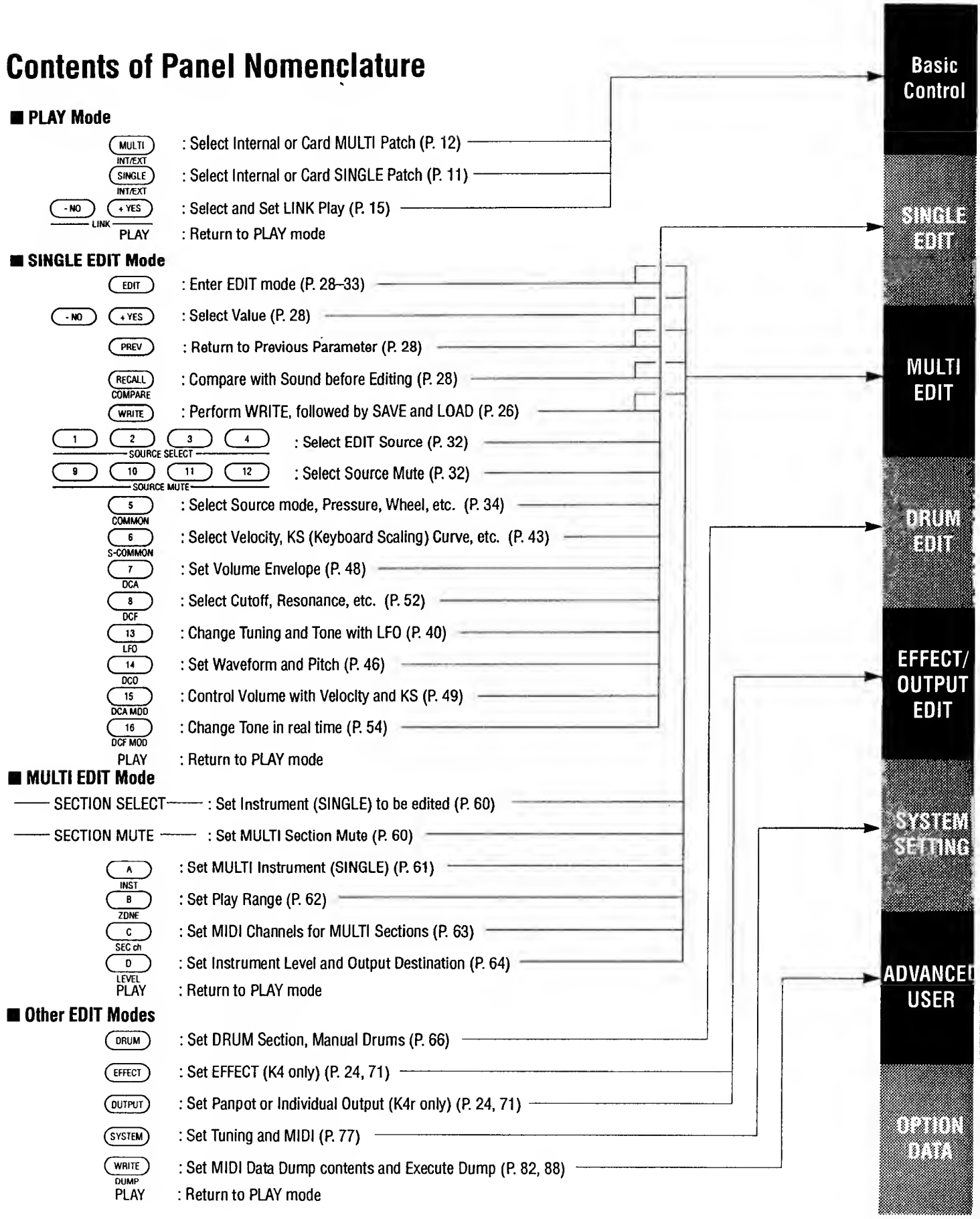




4

6'

# Contents of Panel Nomenclature





6'

6

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# ■ How to use this manual

This manual is composed of three chapters and appendices as shown below.

**Chapter 1.: Introduction**

- Instrument Setup
- Let's Play!
- The Fundamentals of MIDI

**Chapter 2.: Applications**

- K4/K4r Structure of Patches
- The Tone Editing Process
- Saving and Loading Data
- Before Entering EDIT Mode: The Basics of Editing
- Editing a SINGLE Patch
- Editing a MULTI Patch
- Editing Sounds for the DRUM Section
- EFFECT (K4) and OUTPUT (K4r) Settings
- SYSTEM Programming

**Chapter 3.: Advanced Applications**

- MIDI DATA DUMP
- Play Using a Sequencer or Computer
- MULTI Real Time Play
- MIDI for the Advanced User

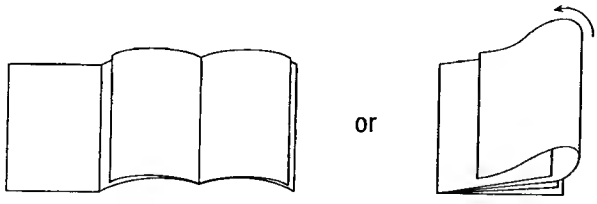
**Appendices**

- Error Messages
- Troubleshooting
- Parameter Reference Chart
- DRUM Section and EFFECT Factory Settings
- Blank Chart
- MIDI Implementation Chart

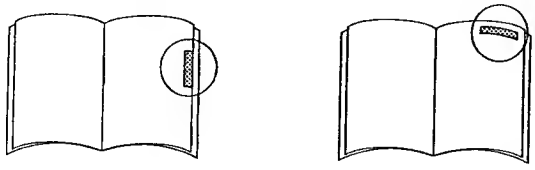
**Index**

**Specifications**

Page 6' explains the basic function of each panel switch and the page number for more detailed information. This page pulls out and can be seen while reading other pages.




A section heading appears on the left or right side of each page, which makes it easy to locate a particular section of the manual. In addition, the primary subject covered on each page is shown in the upper right corner.





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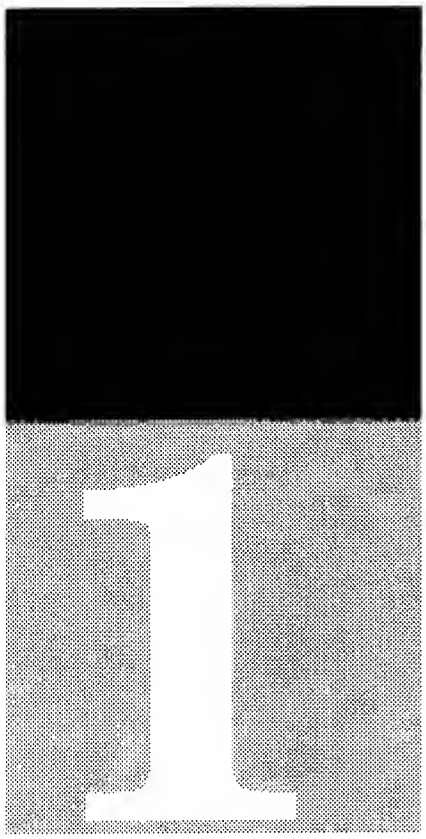


# Chapter 1. Introduction

This chapter explains how to set up the K4/K4r and the functions available when playing.

## 1-1. Instrument Setup

1. Making Connections

## 1-2. Let's Play!

1. Selecting a PLAY mode (SINGLE or MULTI)
2. Possibilities of MULTI PLAY Mode
3. Tuning and Transposing
4. LINK Play
5. DRUM Play
6. Play Using a Computer or Sequencer

## 1-3. The Fundamentals of MIDI

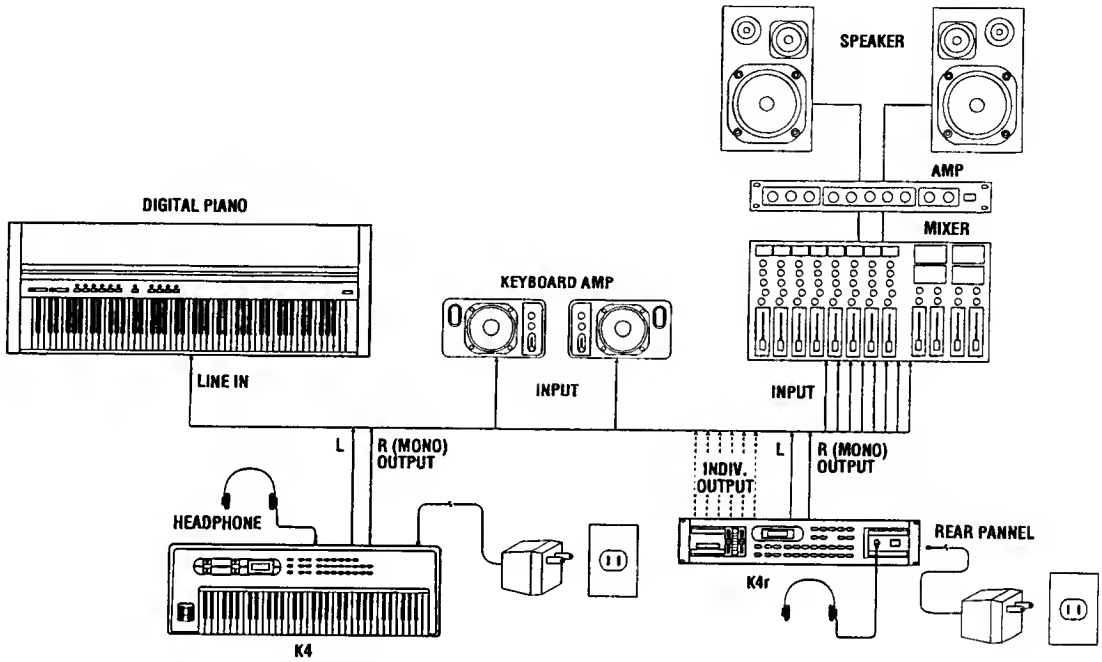
10

# 1-1. Instrument Setup

## 1. Making Connections:

How to set the unit up quickly and easily

(1) Connect the power adapter and keyboard amp. (or headphones) as shown in below.




***Note:*** *The K4/K4r has no internal power amp. or speakers. In order to obtain sound output, you may either use headphones, or connect it to a keyboard amp. or PA system. It is possible to use home radio cassette players or audio amps, but caution should be paid to when the power is turned on and to volume, etc., in order to avoid damage to these appliances.*

```
   *KAWAI K-4*
SYNTHESIZER
```

(2) Turn the POWER switch at the right of the rear (K4r: front) panel on. This display lasts only a few seconds.

```
   *KAWAI K-4r*
SYNTHESIZER
```

```
SINGLE
IA-1   C.Grand
```

(3) The unit is now ready to play.

(4) The K4/K4r retains in memory the parameters in it when the power was turned off. When the POWER has been turned on again, you may call up the patch that was being played at that time by pressing the (RECALL).

(5) Turn on the power of amps and other equipment connected to the K4/K4r after turning the K4/K4r on, to protect the other equipment.



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# 1-2. Let's Play!

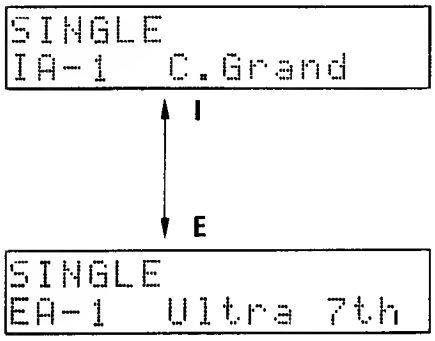
First, let's take a look at the tones currently stored into the memory of the K4/K4r.

## 1. Selecting a PLAY Mode (SINGLE or MULTI)

With the K4/K4r, each single tone is referred to as a SINGLE Patch, and the combined setting of multiple patches is referred to as a MULTI Patch.

### 1) SINGLE PLAY

64 different SINGLE Patches may be stored into the internal memory of the K4/K4r. These are stored into the four banks, A–D, each of which can store 16 patches (for a total of 64). Cards may also be used to store an additional 64 patches, 16 in each of the four banks from A–D.




**<Procedure>**

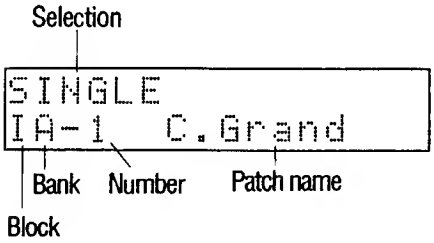
(1) Press (SINGLE) to select SINGLE PLAY.

(2) With every further press of the (SINGLE), the unit switches between the INT (inside the unit itself) and EXT (card) memories.

I : INT (internal) memory
E: EXT (card) memory

(3) Select a bank from (A) to (D).

(4) Select a number from (1) – (16).




(5) When switching between SINGLE Patches, if the patches are in the same bank, repeat step 4. When they are in the same block, repeat steps 3 and 4.

A SINGLE Patch has now been selected.

> ***Note:*** *The tone patch names and numbers used in this manual are not necessarily the same as those on your K4/K4r.*



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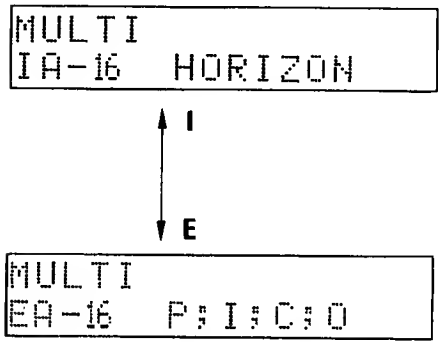
## 2) MULTI PLAY

Sixty-four different MULTI Patches may be stored into the internal memory of the K4/K4r. Split and Layer play is possible with a maximum of eight different instruments (See P. 61). These are stored into the four banks, A–D, each of which can store 16 patches (for a total of 64). Cards may also be used to store an additional 64 patches, 16 in each of the four banks from A–D.




**<Procedure>**

(1) Press (MULTI) to switch to MULTI PLAY.
(2) With every further press of the (MULTI), the unit switches between the INT (inside the unit itself) and EXT (card) memories.

I: INT (internal) memory
E: EXT (card) memory

(3) Select a bank from (A) to (D).
(4) Select a number from (1) – (16).

(5) When switching between MULTI Patches, if the patches are in the same bank, repeat step 4. When they are in the same block, repeat steps 3 and 4.

A MULTI Patch has now been selected.

***Note:*** *MULTI Patches contain numerous settings. Pressing a few keys on the keyboard is not enough to allow you to determine what kind of patch settings have been made: go ahead and play the keyboard from one end to the other, hitting the keys hard and hitting them softly, holding the keys down after you have pressed them, etc., to see what the current settings are.*

# 2. Possibilities of MULTI PLAY Mode

This section explains the basic functions of the MULTI PLAY mode.

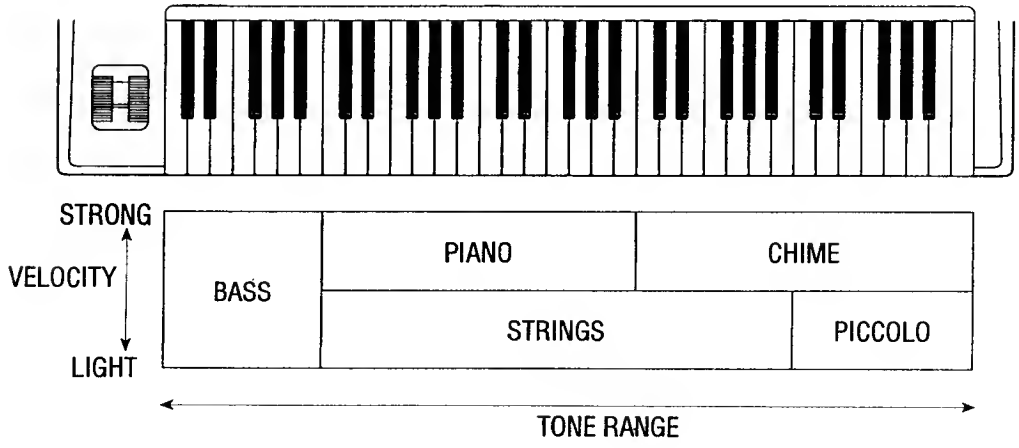
● **SPLIT**
The keyboard may be divided into a maximum of eight segments and each assigned a different (SINGLE Patch) tone. For instance, the low range might be assigned to the bass, the middle range to the piano and the high range to the strings to allow the playing of several different tones on different parts of the keyboard (ID 1–4). (See P. 86)

● **VELOCITY Switch**
Tones may be changed by varying the amount of force applied to the keys during play (at a maximum of two settings per key). For instance, key settings may be made so that a light strike will produce a bass tone, whereas a strong strike will produce a chopper bass tone. Differing tones may also be combined to produce a completely new tone (ID 5–8). ( See P. 87)

● **LAYER**
A maximum of eight tones may be combined into a single sound. A very fat sound may be obtained by combining and slightly detuning similar tones, and a completely new sound created by combining different tones (ID 9–12). (See P. 85)

● **MULTI tone generator**
If each of the MIDI receiving channels of a MULTI Patch is set independently, a maximum of eight (nine including the DRUM Section) MIDI tone generator modules may be created. The unit keyboard may be used to play different tones or control external tone generators while the K4/K4r is played by a computer or MIDI sequencer such as the Q-80 (ID 13–16). (See P. 83)

All of the above functions may be freely combined in a single MULTI Patch.



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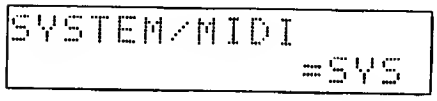
# 3. Tuning and Transposing

## ■ TUNE

(Value: –50 to 0 to +50)

TUNE enables fine tuning of the overall pitch of the K4/K4r, and is used when tuning the synthesizer to other instruments, like a piano.

> ***Note:*** *The pitch tuning of the K4/K4r is based on A3=440 Hz and can be raised or lowered up to a maximum of a half tone (100 cents) in increments of 2 cents.*



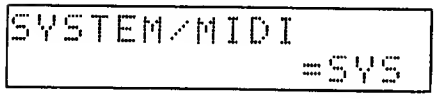
**<Procedure>**

(1) Press (SYSTEM).
(2) Use the VALUE Slider or (+YES) and (-NO) to call up the SYS display.
(3) Press (SYSTEM) several times to call up the TUNE display.
(4) Use the VALUE Slider or (+YES) and (-NO) to fine tune the pitch.

## ■ TRANSPOSE

(Value: –12 to 0 to +12)

The pitch of the K4/K4r can also be transposed up or down in half tone units, allowing you to finger in any key as though it were the key of C.



**<Procedure>**

(1) Press (SYSTEM).
(2) Use the VALUE Slider or (+YES) and (-NO) to call up the SYS display.
(3) Press (SYSTEM) several times to call up the TRANSPOSE display.
(4) Set the VALUE Slider, (+YES) or (-NO).



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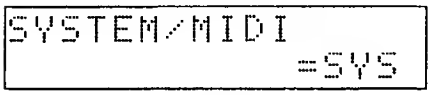
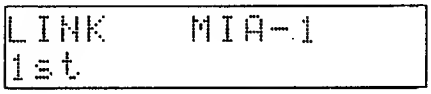
# 4. LINK Play

This function allows patches to be called up in a specified order during LINK Play by merely pressing the (+YES) and (-NO). Any eight of the 256 patches in the unit or card may be selected and stored regardless of whether they are MULTI or SINGLE Patches, in the unit, or on a card.

## ■ How to set a LINK




**<Procedure>**

(1) Press (SYSTEM).
(2) Use the VALUE Slider or (+YES) and (-NO) to call up the SYS display.

(3) Press (SYSTEM) several times to call up the LINK 1st display.
(4) Use the VALUE Slider or (+YES) and (-NO) to select the first patch in the LINK.
(5) For the 2nd and later patches, repeat steps (3) and (4).
(6) When there are 8 or fewer patches to be stored for a LINK, press (-NO) and turn off every time a patch is selected with (4).
(7) To return to the PLAY mode while setting a LINK, first press (MULTI) or (SINGLE), then chose the desired patch.

# 5. DRUM Play

The K4/K4r provides a separate DRUM Section independent of SINGLE Patches or the eight MULTI Patch Sections. A Q-80 MIDI sequencer, etc., may be used to play the DRUM Section while the keyboard is being played.

## ■ MANUAL DRUM

The DRUM Section may be controlled from the keyboard.

> ***Notes:*** *There are two DRUM Sections available in the K4/K4r when a Card is inserted in the Card Slot. One is Internal, the other is the Card (external).*
> *If you select an internal SINGLE or MULTI Patch, the internal DRUM Section is selected.*
> *Selecting an external SINGLE or MULTI Patch automatically selects the external DRUM Section.*
>
> *To SAVE and LOAD the DRUM Section to the Card, see p. 70.*
>
> *If the MIDI transmit channel of the controlling MIDI instrument and the DRUM Section receiving channel of the K4r (channel 10 at time of factory shipment) are not the same, no sound will be produced.*

**<Procedure>**

(1) Press (DRUM) to call up the DRUM Section.
(2) Use the VALUE Slider or the (+YES) or (-NO) as required to adjust the volume of the DRUM Section.

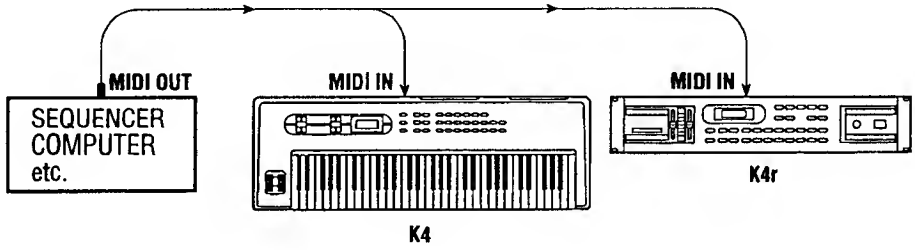
(3) Press (DRUM) to call up the receiving channel set display.
(4) Use the VALUE Slider or the (+YES) or (-NO) as required to set the MIDI receiving channel.

# 6. Playing Using a Computer or Sequencer

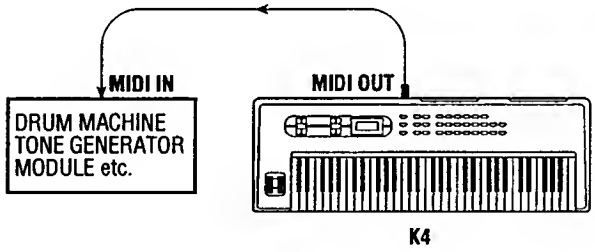
One way to make effective use of the K4 MULTI Section is to use a Q-80 or other MIDI sequencer, or a computer for automatic play. In this way, 1 or 2 Sections can be played manually, while the DRUM Section can be controlled by a Q-80 or other MIDI sequencer or a computer. (See P. 83, 88)

## ■ Connection to an external MIDI device

The K4/K4r controlled by an external computer or recording with a Q-80 MIDI sequencer




The K4 controlling to a MIDI tone generator



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## ■ Note Information

Of the different types of performance data which can be transmitted via MIDI, the most basic is the note message. Note messages indicate such information as which key has been pressed with how much force, and when it was released.

## ■ Note Number

In order to enable the control instrument to differentiate between keys when they are played, a number is assigned to each, called a note number. Middle C (C3) is MIDI note number 60, and each note number corresponds to a half tone, or one key on the keyboard (MIDI divides the half tones from C-2 to G8 into 128 steps, numbering them in sequence from lowest to highest).

## ■ Velocity

This is a message which tells with how much force a key on the keyboard was pressed (velocity is detected not by the pressure on the key, but by the speed of its movement at the time the note on message is sent).

## ■ Aftertouch

Numerous kinds of effects may be obtained by pressing harder after a key has once been pressed. Aftertouch is a message which transmits the amount of pressure with which a key is being pressed.

## ■ Program Change

Most MIDI instruments currently in use allow settings, tones, and other data to be programmed. These programs can be switched by a message from the master instrument. This type of message is called a program change. Since MIDI standards say only that numbers from 0 to 127 can be used as program change data, the items in the tone memory that correspond to the program change numbers are different for every type of instrument.

## ■ Control Change

Besides information regarding when a key has been pressed and released and so on, volume, vibrato, hold, portamento on/off, damper and soft pedal on/off, pan and aftertouch information, etc., are functions which may be handled in many different ways as performance data. These are transmitted as control change messages.

## ■ Pitch Bend

This is a message which tells just how far the pitch bend wheel has been turned. The maximum amount of pitch bend is usually programmed in the synthesizer's patch data. Therefore, pitch range depth may differ between instruments.


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## ■ Exclusive Messages

While MIDI is a standard accepted world-wide, in order to get the most out of the different types of equipment produced by different manufacturers, each produces to some extent, their own independent specifications. These are outside of the specifications prescribed by MIDI, and consist of messages for the transmission and reception of information unique to a particular piece of equipment. Called "system exclusive messages," these may be used to exchange tone data between equipment produced by the same manufacturer and for storing tone data to a computer.

## ■ Others

**● LOCAL Control On/Off**
LOCAL Control is a message for the transmission of keyboard and tone data within the MIDI system. When LOCAL Control is turned off, keyboard data is not sent to the internal tone generator, but only to the MIDI OUT jack. This function is often used for the external control of a MIDI tone generator module that is different than the keyboard being used, or to use only the keyboard as a MIDI keyboard controller.

**● All Notes Off**
This is a message which stops all sounds currently being produced.

**● Active Sensing**
The purpose of this message is to prevent a bad cable or connection from causing stuck notes.

**● Reset**
This message reinitializes the unit while the power is still on.

**● Common**
This indicates the selection or location of a song when a MIDI sequencer or drum machine are being played in sync.

**● Real Time**
This message indicates the timing clock or start/stop, etc., when a synthesizer, drum machine or other device are being played in sync.

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# Implementation chart

Data which can be transmitted and received by MIDI equipment includes only that which is common to both the transmitter and receiver. MIDI is actually nothing more than a standard which enables the transmission of performance data via a MIDI cable; the implementation chart is merely a chart which states what the equipment is capable of. Each different type of equipment has its own characteristics, and capabilities. This goes for MIDI standards as well: some capabilities are not compatible with some types of equipment. That is why each MIDI unit comes with a list of the types of data it is capable of receiving and sending, called the MIDI implementation.

# MIDI and rhythm performance

The K4/K4r has a rhythm sound generator, and although drum sounds can be played from the keyboard, it is generally more practical to create an ensemble using a Q-80 or other MIDI sequencer or drum machine. The rhythm sound generator may be used to create many different kinds of tones simultaneously. Because of the number of drum sounds in the K4/K4r, each sound is allocated to a single note number on the same MIDI channel.


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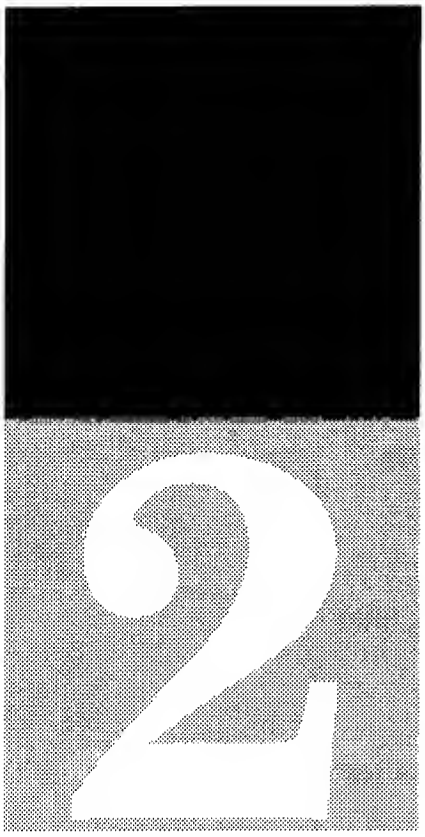

# Chapter 2. Applications

This chapter explains the creation and editing of tone data, as well as how to combine the tones for a variety of setting and effects.


## 2-1. K4/K4r Structure of Patches
## 2-2. The Tone Editing Process
## 2-3. Saving and Loading Data
## 2-4. Before Entering EDIT Mode
## 2-5. Editing a SINGLE Patch
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2. Using MULTI Patches
3. Choosing a Section to Edit
4. Editing Section Parameters

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2. Editing the DRUM Section
3. Writing the DRUM Section

## 2-8. EFFECT (K4) and OUTPUT (K4r) Settings
1. EFFECT Patches (K4 only)
2. OUTPUT Patches (K4r only)
3. Programming Parameters
4. Explanation of Effect Type (K4 only)
5. Writing EFFECT and OUTPUT Settings

## 2-9. SYSTEM Programming
1. SYS (SYSTEM) Group
2. TRS (Transmit) Group
3. RCV (Receive) Group

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# 2-1 K4/K4r Structure of Patches

## K4/K4r Configuration

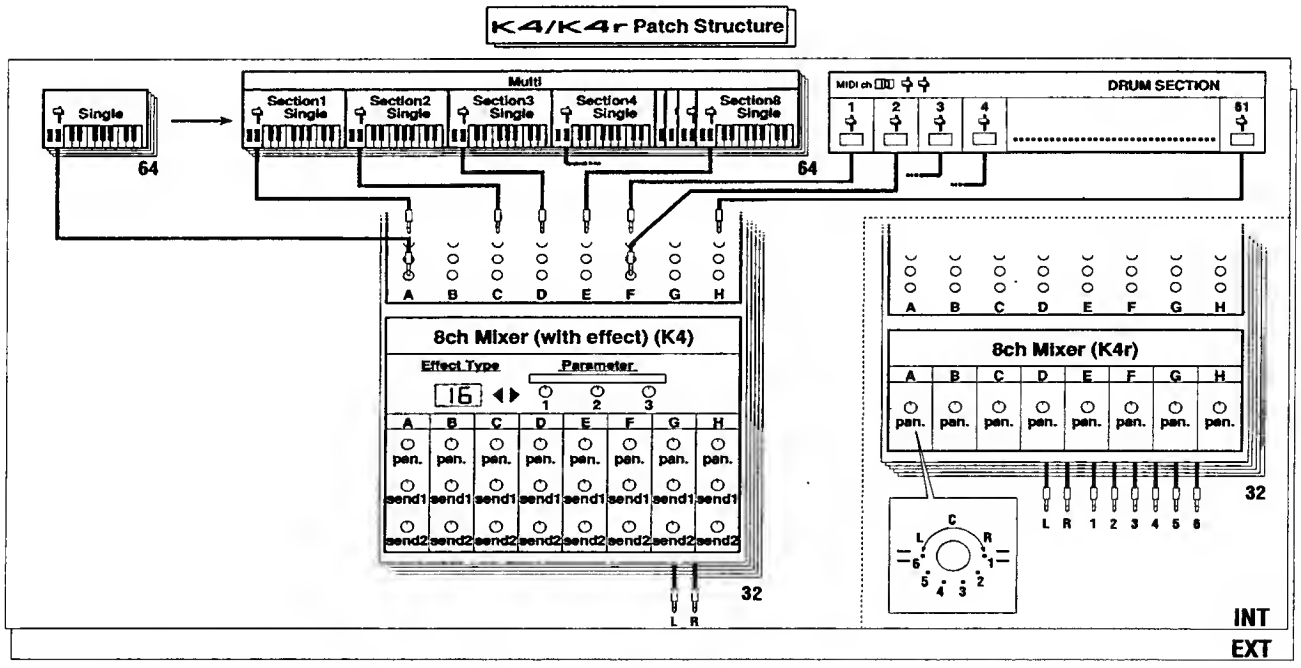
Besides SINGLE and MULTI Patches, the K4 contains 32 EFFECT Patches; the K4r contains 32 OUTPUT Patches.

As shown in the structure, it is possible to feed the signal from a SINGLE Patch into the desired SUBMIX Channel (lettered A to H).

It is also possible to feed the signal from each of the eight Sections of a MULTI Patch into the SUBMIX Channel in the desired fashion.

Furthermore, one may feed each of the 61 tones of the DRUM Section into the SUBMIX Channels as with the SINGLE and MULTI patches.

The following structure shows the K4/K4r Patches.




***Notes:*** *SUBMIX CH can be programmed to overlap. For example, the output signal from all eight Sections of a MULTI Patch can be fed into a single SUBMIX CH.*

*An EFFECT (K4) or OUTPUT (K4r) Setting number can be stored for each SINGLE and MULTI Patch. For SINGLE Patches see P. 33; for MULTI Patches see P. 61 and for DRUM Section see P. 68.*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# 2-2. The Tone Editing Process



The K4/K4r has many programmable parameters. When creating or editing sounds it is best to start with a goal and work to reach that goal.

● **Find a tone to serve as a basis for editing.**
Though "sound creation" may be your goal, creating a tone from scratch is generally quite difficult. It is easier and more effective to find and modify a preset tone which is close to the one you're attempting to create. Since the preset tones have been designed to make full use of the K4/K4r's capabilities, one can learn quite a bit about sound creation on the K4/K4r by modifying them.

● **Decide how to alter the tone.**
If you set a goal for editing then you will know which parameters must be altered. For example, if you wish to change the attack or some other amplitude parameters, then you must alter the DCA; to make the tone more or less brilliant, you must modify the DCF.

● **Change the waveform.**
It is possible to alter the feel of a tone by simply altering the waveform, even if all other parameters are unchanged. If a similar waveform is selected, the change will be subtle; using a much different waveform will create a very different sound.

● **Combine sounds.**
You can make use of MULTI PLAY in sound creation as well, to create a wide variety of sounds. You can layer the same sound and perhaps detune the pitch a little, to create a sound much deeper than the original tone alone. Or you can combine a number of different tones to create an orchestra-like sound. The possibilities are limited only by your imagination.

● **Add effects (K4 only).**
There are usually effects added to sounds such as those you hear on the radio or CD's. Effects are an important element in the creation of complete, polished sounds. The K4r is designed to be used with external effects devices.

● **Manipulate settings.**
Manipulating settings such as Velocity and Modulation, especially in combination in a MULTI Patch, can create even more realistic and sophisticated sounds.

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# 2-3. Saving and Loading Data

The memory of the K4/K4r can hold 64 SINGLE Patches and 64 MULTI Patches (the latter containing up to 8 single tones each), for a total of 128 patches, plus DRUM Section and EFFECT (K4) or OUTPUT (K4r) Settings. At the time your synthesizer left the factory, the "factory presets" (a selection of patches and settings designed to make good use of the K4/K4r's capabilities) were stored in its memory. You will find that editing these tones to create new ones suiting your taste an easy and pleasant task. Tones so edited can be stored in the memory, and will be described later; but the data originally stored there will be erased. In case you want to keep the factory presets, you should either store them in an optional card (DC-16) or copy them by MIDI DATA DUMP into a computer or a sequencer such as the Q-80.

***Notes:*** *Be sure to use only the designated memory card (DC-16).*
*When using a card, please read the accompanying instruction manual carefully.*

*Do not cut the synthesizer's power during a LOAD or SAVE operation, as it may destroy any data stored in the card and/or the synthesizer's memory.*

*Should you wish to SAVE or LOAD individual patches, or DRUM Section, EFFECT (K4) or OUTPUT (K4r) Settings, please refer to the descriptions of the WRITE operations in each section. (For SINGLE Patches, see P. 58; for MULTI Patches, see P. 65; for EFFECT (K4) or OUTPUT (K4r) Settings, see P. 76; and for the DRUM Section, see P. 70.)*

## CARD FORMAT

New cards and cards which have been used in other machines must be formatted before they can be used with the K4/K4r.

***Note:*** *When the FORMAT procedure is performed, all data already stored in the card will be erased. PROTECT will not work when formatting, so be sure to check the contents of a card before you format it.*

**<Procedure>**

(1) Insert the card into the card slot (in the rear panel of the K4, or the front panel of the K4r) so that the ▼ mark and the △ mark are aligned.

```
CARD FORMAT
     EXEC?=Y/N
```

(2) Press (WRITE) repeatedly until CARD FORMAT appears on the display.

```
CARD FORMAT
     SURE?=Y/N
```

(3) Press (+YES) to FORMAT, or (-NO) to quit.

(4) If you press (+YES), the message SURE? will appear on the display to ask for confirmation.

(+YES)

```
     COMPLETED!
```

(5) Press (+YES) again to continue, or (-NO) to quit.

(-NO)

```
     CANCELED!
```

(6) Continue with the SAVE operation.



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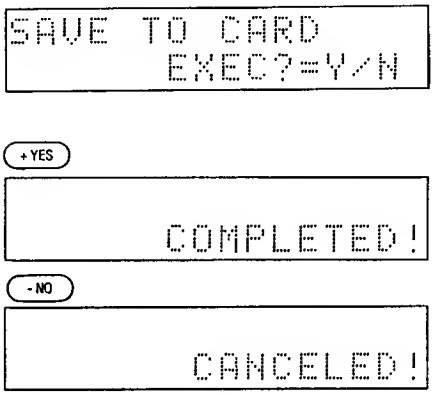
# DATA SAVE

This procedure copies all patch, EFFECT (K4) or OUTPUT (K4r) Setting and DRUM Section data from the synthesizer to the card.

***Note:*** *When the SAVE procedure is performed all data already stored in the card will be erased.*




**<Procedure>**

(1) Press (WRITE) repeatedly until SAVE appears on the display.

(2) Press (+YES) to SAVE, or (-NO) to quit.

(3) If you press (+YES), the message SURE? will appear on the display to ask for confirmation.

(4) Press (+YES) again to continue, or (-NO) to quit.

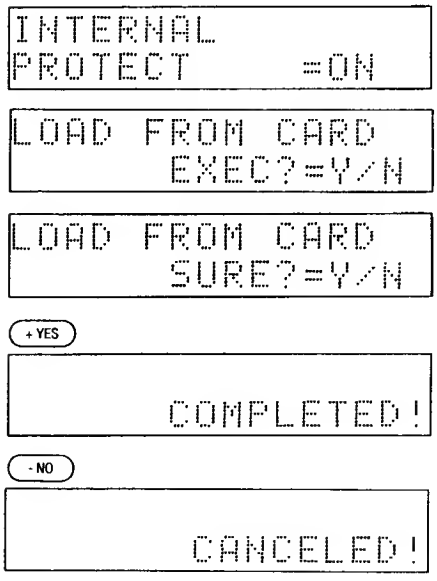
(5) Press (WRITE) repeatedly until card PROTECT appears on the display.

(6) To protect the card data, set the memory PROTECT switch to ON. (See DATA LOAD below)

# DATA LOAD

This procedure copies all patch, EFFECT (K4) or OUTPUT (K4r) Setting and DRUM Section data from the card into the synthesizer.

***Note:*** *When the LOAD procedure is performed all data already stored in the synthesizer will be erased.*




**<Procedure>**

(1) Insert the card into the card slot (in the rear panel of the K4, or the front panel of the K4r) so that the ▼ mark and the △ mark are aligned.

(2) Press (WRITE) repeatedly until internal PROTECT appears on the display.

(3) Press (-NO) to turn the PROTECT switch to OFF.

(4) Press (WRITE) repeatedly until LOAD appears on the display.

(5) Press (+YES) to LOAD, or (-NO) to quit.

(6) If you press (+YES), the message SURE? will appear on the display to ask for confirmation.

(7) Press (+YES) again to continue, or (-NO) to quit.

(8) To protect internal patch data, return the Internal PROTECT switch to ON.

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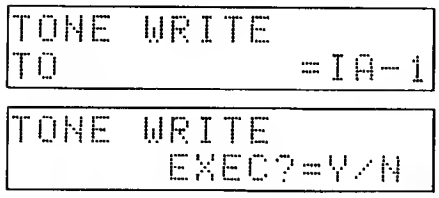
# 2-4. Before Entering EDIT Mode

## The Basics of Editing

Editing is the creation or alteration of synthesizer tones and settings. This operation can be performed in the EDIT mode.

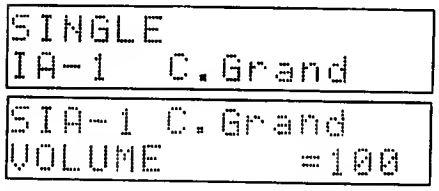
***Note:*** *You will need to use the WRITE operation to store edited data for future use.*




***Note:*** *Data that is not stored using the WRITE operation will not be changed in the memory. Therefore, feel free to try editing the preset data and see how each setting change affects the actual sound produced.*

## How to Enter EDIT Mode

You may edit SINGLE patches in SINGLE EDIT mode, and MULTI Patches in MULTI EDIT mode. Entering EDIT mode is the same in either case.



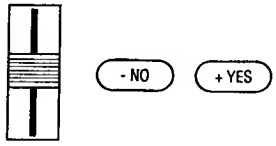

**<Procedure>**

(1) Call up the patch to be edited on the display.

(2) Press (EDIT) to enter EDIT mode.

## Calling up Parameters and Assigning Values on the K4/K4r

Parameters are divided into groups according to function, and then assigned to various switches.




**<Procedure>**

(1) The parameter groups are assigned to switches A, B, C, D, and 1 through 16 on the panel. Press the switch for the proper parameter group repeatedly until the desired parameter appears on the display.

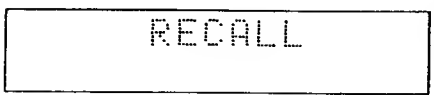
(2) If you accidently pass the parameter you want, press (PREV) to return to it.

(3) The VALUE Slider may be used to change the value greatly; to change it slightly, press (+YES) or (-NO).

(4) To compare the edited sound with the original, press (RECALL COMPARE). The value before editing will appear on the display, and by playing the keyboard you can hear the original sound.

(5) Press the (RECALL) again to continue editing.

(6) To stop editing, press (SINGLE) or (MULTI).




***Note:*** *If you accidentally leave EDIT mode, press (RECALL). The following display will appear, and you can return to EDIT mode by pressing (EDIT).*



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# 2-5. Editing a SINGLE Patch

## 1. SINGLE Patch Configuration

This section describes the process from the pressing of a key on the keyboard (that is, the reception of a KEY ON signal) to the actual production of a sound, and explains how each part of the K4/K4r operates.

### ■ The Sound Production Process

The K4/K4r configuration consists of three blocks: DCO, DCA, and DCF. The K4 adds a fourth, EFFECT.

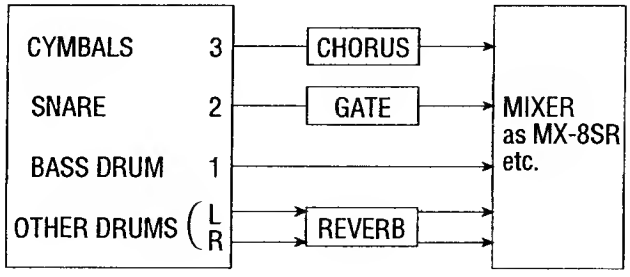
**● DCO**
The DCO receives information from the keyboard concerning which key is pressed, and outputs the preselected basic tone (either DC or PCM waveform) at the pitch of the key that was pressed.

**● DCA**
The DCA adjusts the volume of the signal sent from the DCO. It does not merely set the output volume of the signal; it determines the change in the signal's volume over a period in time as well.

**● DCF**
The DCF adjusts the sound quality of the tone sent from the DCA. The DCF basically operates like a tone control; however, they are essentially different in that the DCF adjustment can be set to vary over time.

**● EFFECT (K4 only)**
It is also possible to add a digital effect to the sounds produced by the synthesizer unit. Synthesized sounds often lack the warmth and ambience of acoustic instruments. It is therefore helpful to add a sense of spatial depth with effects such as Reverb, Chorus and Delay, or distort the sound with Overdrive, to give it a greater sense of realism.

**● INDIVIDUAL OUTPUT (K4r only)**
In addition to the stereo left and right output jacks, the K4r has six Individual Output jacks. In SINGLE PLAY mode, for example, by outputting the DRUM Section through the stereo jacks, the snare through Individual Output jack #1, the kick through jack #2, and the SINGLE Patch through jack #3, it is possible to process each sound differently through an external effects devices.




SINGLE EDIT

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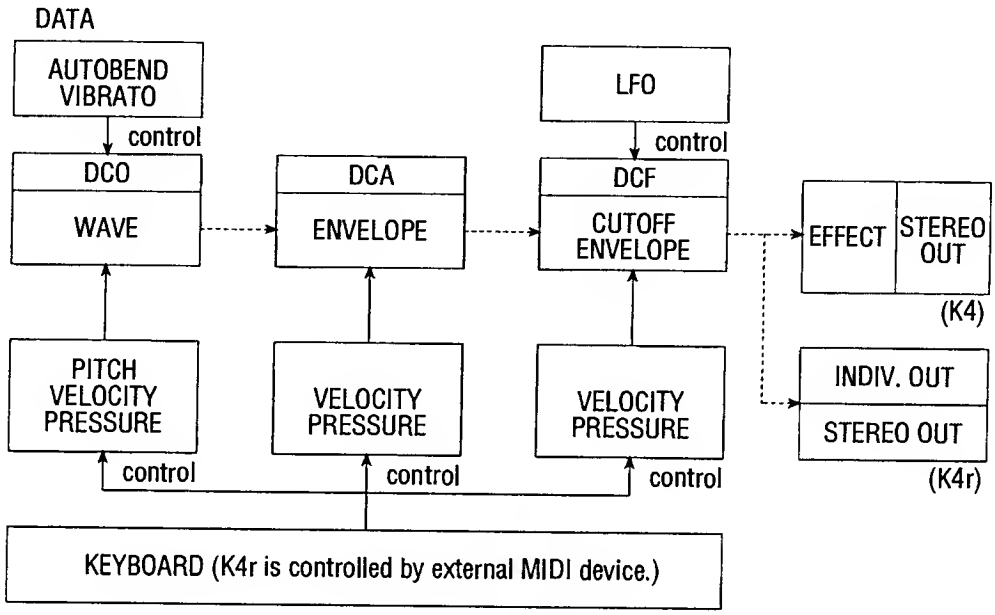


## ■ The K4/K4r Tone Generator

The K4/K4r produces sounds by a system known as DMS Tone Generation. Natural sounds exhibit complex variations in harmonic composition which are very difficult, if not impossible, to reproduce artificially using a single waveform, as would be the case with a conventional synthesizer. DMS Tone Generation makes sound creation easy by temporarily separating the sound into its component elements. It is comparatively easy to create even complex harmonic variations by combining these elements. The K4/K4r is capable of separating a tone into up to four such elements.



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## ■ The K4/K4r's Internal Waveforms

By combining the characteristics of PCM and DC waveforms, the K4/K4r allows free creation of a wide variety of tones.

**● PCM Waveforms**

Conventional synthesizers were able to produce only waveforms such as triangle or sawtooth waves having comparatively simple harmonic configurations. They could not produce metallic sounds and other tones with complicated harmonic components. The K4/K4r has solved this problem by making use of PCM waveforms.

> ***Note:*** *PCM, or Pulse Code Modulation, is a method of reproducing sounds such as those of acoustic instruments by converting them into a digital signal and recording them. The K4/K4r's internal PCM waveforms have a reproduction quality equal to that of a CD.*

**● DC (Digital Cyclic) Waveforms**

DC waveforms consist of Cyclical PCM sounds which have been analyzed and recombined so that they are easy to process. It is useful to combine DC waveforms with PCM waveforms or with other DC waveforms for best results.

## ■ AM (Ring Modulation)

AM (Ring Modulation) is a system which combines two signals to create a single, more complex signal. One waveform is used to modulate or cause a change in the other, so unlike the DCF, which reduces harmonics, this system can produce new harmonics which were not included in either original waveform, allowing the creation of metallic, distorted or otherwise forceful sounds.

> ***Note:*** *Keep in mind that it is important to give careful consideration to the extent of level modulation when using AM.* *(See P. 35)*

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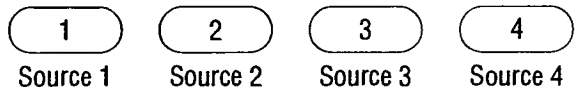
## ■ Choosing a Source to Edit

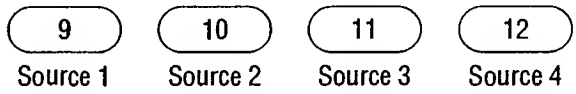
Each Source must be set individually for SINGLE Patches.

**<Procedure>**

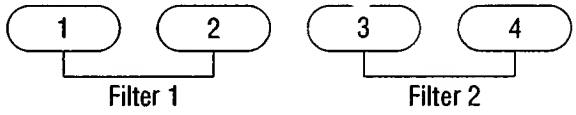
(1) Select the Source to be edited using the Source Select switches 1, 2, 3, or 4.



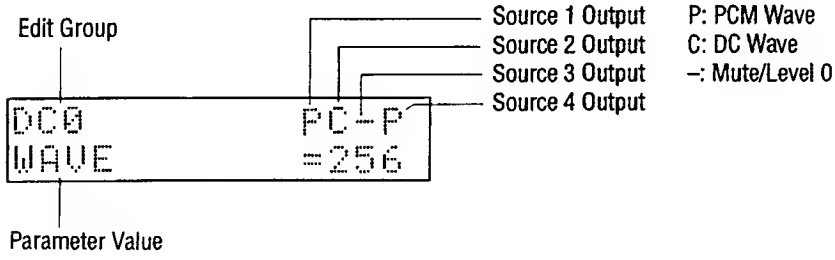

(2) To listen to a Source's sound individually, use the Source Mute switches 9, 10, 11, and 12 to mute the other Sources temporarily.




(3) When editing filter parameters, select the desired Filter using the Source Select switches 1, 2 (for Filter 1) and 3, 4 (for Filter 2) as below:




## ■ Display During Editing





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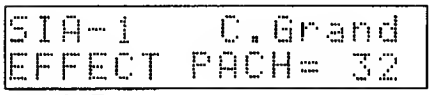
# 2. SINGLE Patch parameters

## ■ EDIT Group

### ● VOLUME

(Value: 0–100)

This controls the volume of all SINGLE Patches. The differences in volume between patches are adjusted so as to avoid any unnaturalness when switching between patches.




(OUTPUT)

### ● EFFECT (K4)/OUTPUT (K4r)

(Value: 1–32)

This allows selection from among the 32 EFFECT (K4)/OUTPUT (K4r) Settings made previously. (See P. 24, 71)

### ● SUBMIX CH

(Value: A–H)

**K4**

A single EFFECT may contain as many as eight different OUTPUT mode settings that determine the level of EFFECT and sound image orientation. This allows you to select which type mode among these eight modes to use. (See P. 24, 71)

**K4r**

The K4r has stereo L, R and six Individual Output jacks. Eight OUTPUT mode settings may be made regarding whether orientation is to be determined by stereo L, R and whether to provide output through a single source, from which the mode to be used may be selected. (See P. 24, 71)

> ***Note:*** *The K4r does not have EFFECT Settings.*

### ● NAME 1st-10th

Edited patches are given names consisting of ten characters.

> ***Notes:*** *Move the cursor with the (EDIT) and (PREV) then select a number or letter with the VALUE Slider, (+YES) and (-NO).*
>
> *The following list gives the characters which may be used for a patch name.*

Valid name characters

> ■, !, ", #, $, %, &, ', (, ), *, +, –, , , /
> 0, 1, 2, 3, 4, 5, 6, 7, 8, 9
> :, ;, <, =, >, ?, @
> A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z
> [, ¥, ], ^, -, `
> a, b, c, d, e, f, g, h, i, j, k, i, m, n, o, p, q, r, s, t, u, v, w, x, y, z
> {, |, }, →, ←

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## ■ COMMON Group

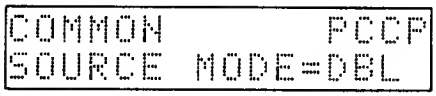
These are set to act on all Sources of a SINGLE Patch.

- Source mode
- AM 1 → 2
- AM 3 → 4
- POLY mode
- Pressure → Freq.
- Wheel Assign
- Wheel Depth
- AUTO BEND Time
- AUTO BEND Depth
- AUTO BEND KS (Keyboard Scaling)
- AUTO BEND Velocity

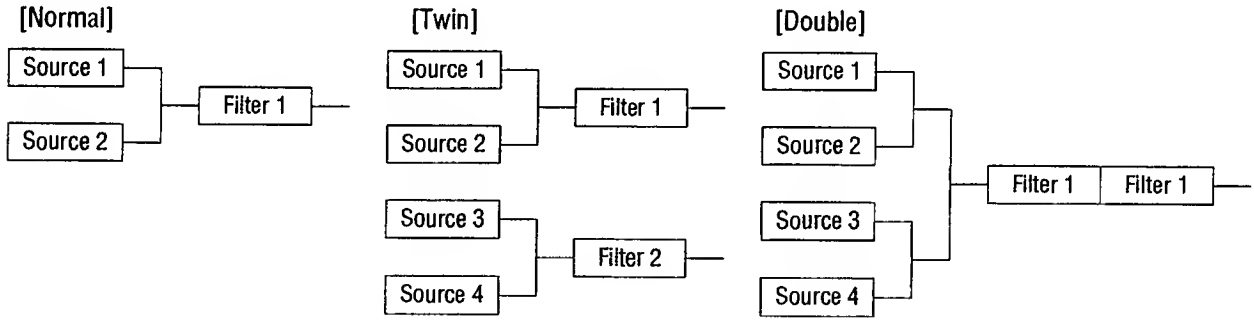
### ● Source mode

(Value: NORM, TWIN, DBL)

Combinations of DCO and DCA are called "Sources." With the K4/K4r, four Sources may be combined to create a tone.




This sets the Source combination and how the Filter will be used with the Source.




***Note:*** *Choosing "TWIN" or "DBL" makes the K4/K4r an 8-voice polyphonic instrument – that is, limited to sounding a maximum of 8 notes at a time.*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```
COMMON          PCCP
AM  1>2         =ON
```

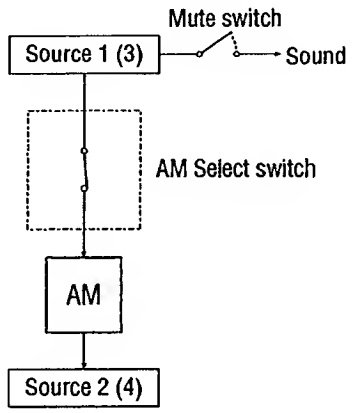
(3>4)

**● AM (Ring Modulation)**

(Value: ON,OFF)

This sets whether the Ring Modulation wave type is to be used with Source 1 (3). When this value is ON, wave 1 (3) is used to distort wave 2 (4).

***Note:*** *When AM is in use, Source Mute is enabled. A setting may be made as to whether to output the sound or mute for the modulator side.* *(See P. 32)*




```
COMMON
POLY MODE    =PLY1
```

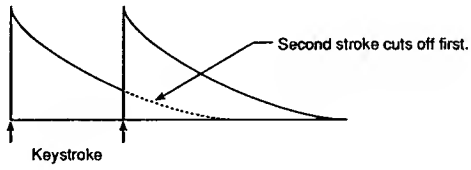
**● POLY mode**

(Value: PLY1, PLY2, SOL1, SOL2)

Sets the way the SINGLE Patch is to sound.

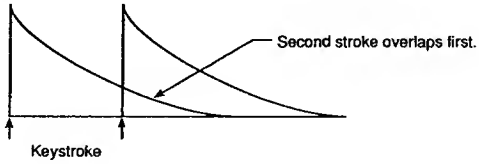
**• PLY1 (Poly 1)**

This mode cuts off the previous note each time the same note is struck.




**• PLY2 (Poly 2)**

This mode allows the previous note to sound each time the key is struck. When the number of tones which may be created at one time is exceeded, the tone of the next key pressed will take priority.



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**• SOL1 (Solo 1)**

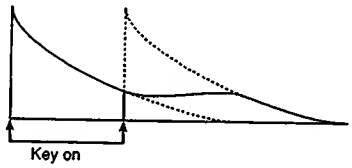
This is used to produce only monophonic sound without harmony.

> ***Note:*** *When one key is held down and another key pressed, when the second key pressed is released, the tone produced by the first key will still be made.*

With a SINGLE Patch, because the K4/K4r can be used as a monophonic synthesizer, it is outstanding as a fat lead synthesizer for rock music. When a key is pressed down and held and the next key pressed, after the second key is released, the sound of the first key remains. This works well with fast passages.

**• SOL2 (Solo 2)**

This is basically the same in principle as SOL1 above, but when a second or further keys are pressed while a first is being held down, there is no attack phase for those following the first. This is good for producing real tone variation, such as for a distorted lead guitar or solo violin.




**● BENDER RANGE**

(Value: 0-12)

```
COMMON          PCCP
BNDR RANGE = 12
```

This sets the amount of pitch variation when using Pitch Bend. The range is from a semitone to a maximum of one octave variation.

**● PRESS FREQ**

(Value: –50 to 0 to +50)

```
COMMON          PCCP
PRESS>FREQ =-50
```

Sets the level of Aftertouch (the effect of pressing a key even harder once again after having pressed and held it down). When this is a negative value, this decreases with the increase in pressure applied to the key.

The type and level of effect of Aftertouch varies with the tone setting.



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● **WHEEL ASSIGN**

(Value: VIB, LFO, DCF)

Sets the type of effect that will take place when the Modulation Wheel has been used.

```
WHEEL          PCCP
ASSIGN        =VIB
```

VIB → causes the Vibrato Effect.
LFO → causes the Wah wah Effect.
DCF → adjusts Filter Cutoff

● **WHEEL DEPTH**

(Value: –50 to 0 to +50)

Adjusts the level of effect when the Modulation Wheel has been used. When this is a positive value, the effect increases with the increase in the amount of use of the Wheel.

```
WHEEL          PCCP
DEPTH         =-50
```

■ **AUTO BEND**

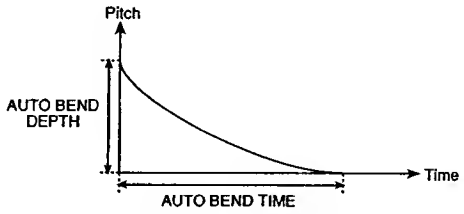
Pitch Bend can be set to go into effect automatically upon the strike of a key. When the set value is made small, the pitch changes of sounds characteristic to ethnic and lead instruments can be reproduced. When the value is made large, effects such as tabla and electric tom can be created.

● **TIME**

(Value: 0-100)

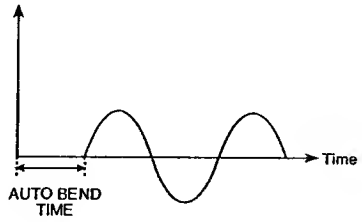
Sets the Auto Bend depth duration.

```
AUTO BEND      PCCP
TIME          =100
```




| Value | Effect |
|---|---|
| 0 | No effect |
| ⌇ | ⌇ |
| 100 | Maximum period |

Sets the amount of time before Vibrato takes effect after a key is pressed.

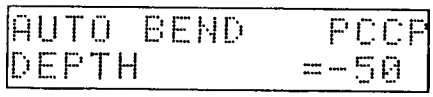


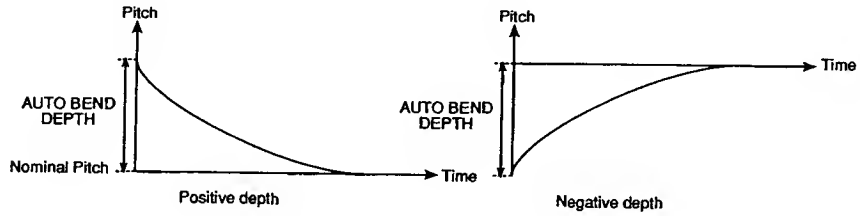
38

● **DEPTH**

(Value: –50 to 0 to +50)

Sets the pitch variation amplitude for Auto Bend.

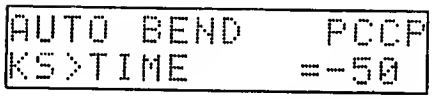


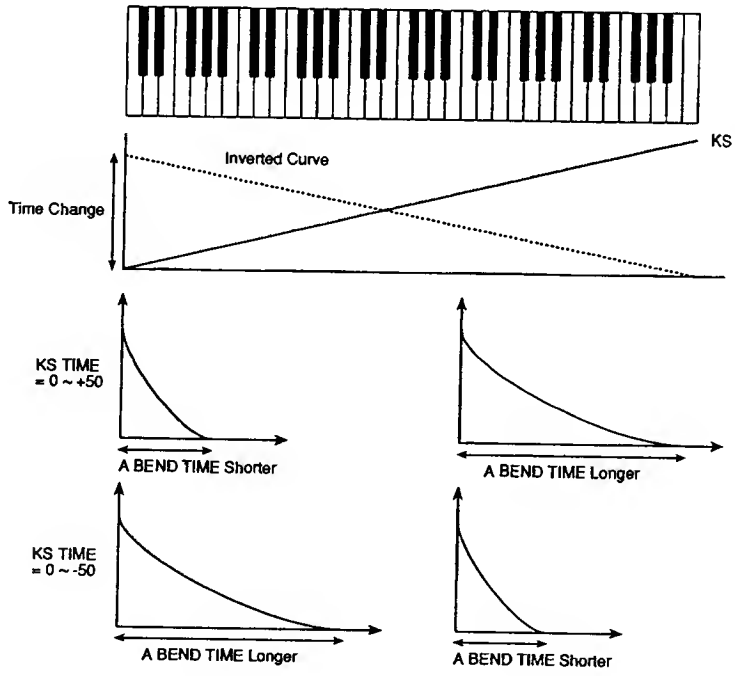

| Value | Effect |
|---|---|
| +50 | Pitch drops to nominal value |
| ⟆ | ⟆ |
| 0 | No effect |
| ⟆ | ⟆ |
| -50 | Pitch rises to nominal value |

● **KS TIME**

(Value: –50 to 0 to +50)




The Auto Bend time duration can vary with the location on the keyboard. This variation is determined by the KS Curve. (See P. 45)




| Value | Effect |
|---|---|
| +50 | Maximum effect with normal KS curve |
| ⟆ | ⟆ |
| 0 | No effect |
| ⟆ | ⟆ |
| -50 | Maximum effect with inverted KS curve |



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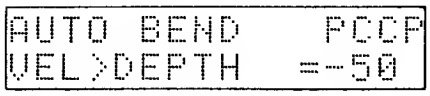
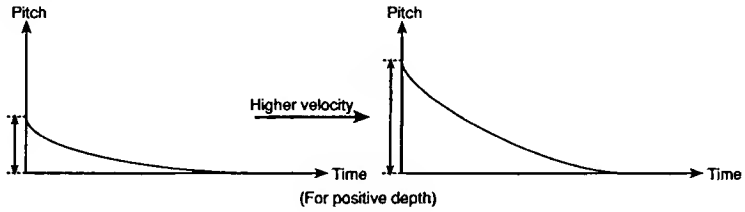



### ● VEL DEPTH

(Value: –50 to 0 to +50)

Auto Bend pitch depth of change can be varied depending on the amount of pressure placed on the keys while playing.




| Value | Effect |
|---|---|
| +50 | Depth increeses with velocity |
| ⟆ | ⟆ |
| 0 | No effect |
| ⟆ | ⟆ |
| -50 | Depth decreases with velocity |

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## ■ LFO GROUP

Vibrato may be obtained by adding LFO to the DCO, and a Wah wah effect by adding LFO to DCF.

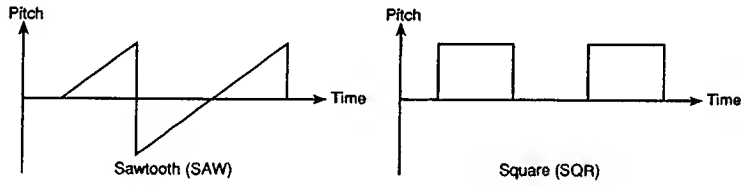
- VIBRATO Shape
- VIBRATO Speed
- VIBRATO Depth
- VIBRATO Pressure Depth
- LFO Shape
- LFO Speed
- LFO Delay
- LFO Depth
- LFO Pressure Depth

### ■ VIBRATO

An Effect which creates oscillations in pitch.

### ● SHAPE

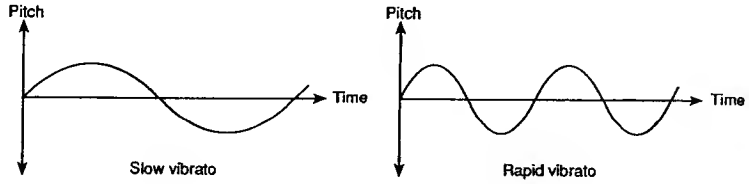
(Value: TRI, SAW, SQR, RND)
Sets how the pitch is to be shaped.




| Value | Effect |
|---|---|
| TRI | Triangle |
| SAW | Sawtooth |
| SQR | Square |
| RND | Random variation |

### ● SPEED

(Value: 0-100)
Sets Vibrato speed.




| Value | Effect |
|---|---|
| 0 | Slow vibrato |
| ≀ | ≀ |
| 100 | Rapid vibrato |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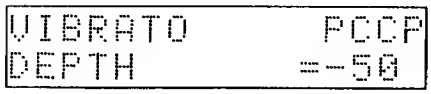
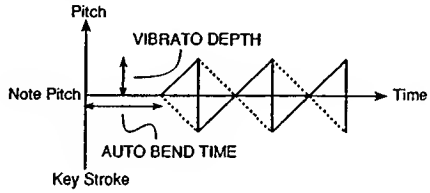



### ● DEPTH

(Value: –50 to 0 to +50)

Sets the depth of change of Vibrato pitch variation. The Vibrato for each source may be turned ON and OFF with the DCO Group VIBRATO/AUTO BEND. (See P. 47)

The amount of time after a key is pressed until Vibrato takes effect can be set with COMMON Group AUTO BEND TIME. (See P. 37)

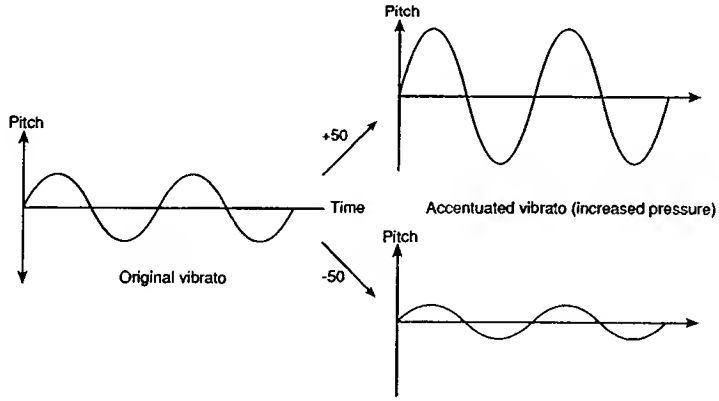



| Value | Effect |
|---|---|
| +50 | Maximum vibrato with normal waveform |
| ⟆ | ⟆ |
| 0 | No vibrato |
| ⟆ | ⟆ |
| -50 | Maximum vibrato with inverted waveform |

### ● PRESS DEPTH

(Value: –50 to 0 to +50)

The depth of Vibrato pitch change may be adjusted by the amount of pressure placed on the key while playing.




| Value | Effect |
|---|---|
| +50 | Increased vibrato |
| ⟆ | ⟆ |
| 0 | No effect |
| ⟆ | ⟆ |
| -50 | Decrease vibrato |

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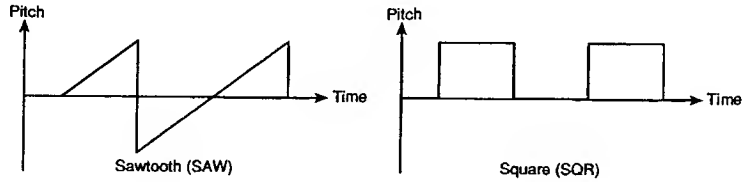
## ■ LFO

Varies tone according to the LFO cycle (for a LFO Modulation "Wah wah")

### ● SHAPE

(Value: TRI, SAW, SQR, RND)

Sets how the pitch is to be shaped.

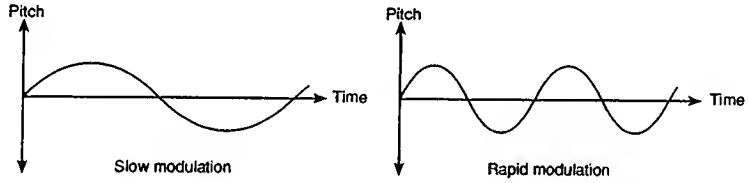



| Value | Effect |
|---|---|
| TRI | Triangle |
| SAW | Sawtooth |
| SQR | Square |
| RND | Random variation |

### ● SPEED

(Value 0-100)

Sets LFO Modulation speed.




| Value | Effect |
|---|---|
| 0 | Slow modulation |
| ⌇ | ⌇ |
| 100 | Rapid modulation |

### ● DELAY

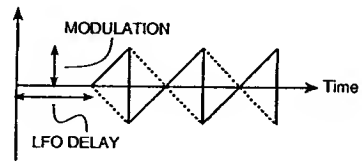
(Value- 0-100)

Sets the amount of time before LFO Modulation takes effect after a key has been pressed.

### ● DEPTH

(Value: –50 to 0 to +50)

Sets the depth of change of the LFO Modulation tone.




| Value | Effect |
|---|---|
| +50 | Maximum modulation with normal waveform |
| ⌇ | ⌇ |
| 0 | No modulation |
| ⌇ | ⌇ |
| -50 | Maximum modulation with inverted waveform |



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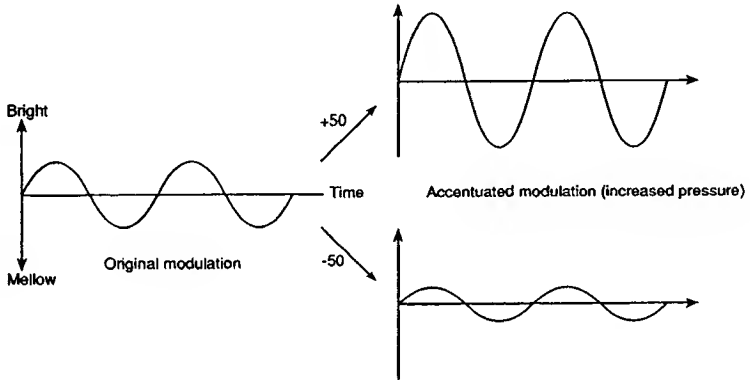
● **PRESS DEPTH**

(Value: –50 to 0 to +50)

Depth of LFO Modulation tone change may be adjusted depending upon the amount of pressure placed on the key when playing.

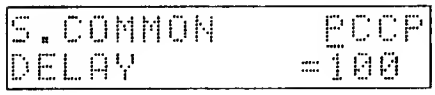



| Value | Effect |
|---|---|
| +50 | Increased modulation |
| ⌇ | ⌇ |
| 0 | No effect |
| ⌇ | ⌇ |
| -50 | Decrease modulation |

## ■ SOURCE COMMON (S-COMMON) Group

This sets the following parameters for each Source:

- DELAY
- VEL CURVE
- KS CURVE

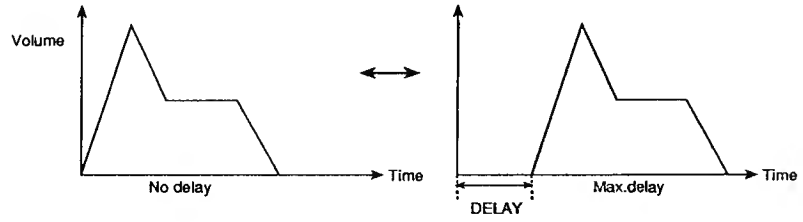



● **DELAY**

(Value: 0 to 100)

This sets the time for each source from the point the key is struck to the point when attack begins.

***Note:*** *For NORMAL and DOUBLE this follows the value selected for Source 1, and for TWIN it follows the value selected for Sources 1 and 3.*



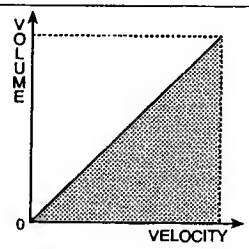
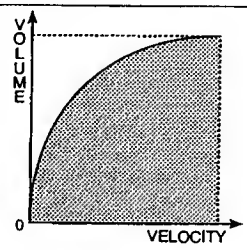
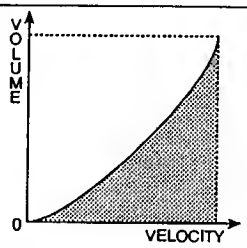
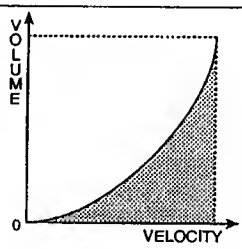
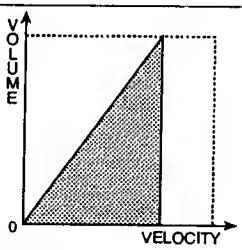
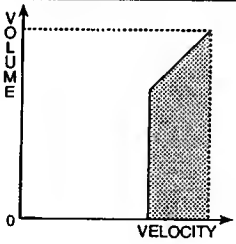
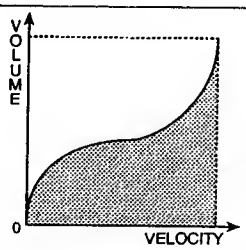
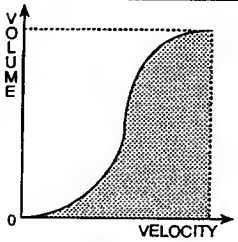

| Value | Effect |
|---|---|
| 0 | 0 |
| ⌇ | ⌇ |
| 100 | Max. delay |

44

## ■ VEL (Velocity Curve) Chart

● **VEL (Velocity) CURVE**
(Value: 1 to 8)
You can select the way in which volume and tone are changed by how hard the key is struck, choosing from the following eight curves.

### VEL CURVE DIAGRAM

| | | | |
|---|---|---|---|
| 1 |   | This is an easy-to-use, orthodox curve. Volume rises linearly with key velocity. | |
| 2 |   | With this curve, the volume rises rapidly with a light touch. | |
| 3 |   | This curve rises from low to high volume exponentially, making it suitable for deeply emotive tones. | |
| 4 |   | This curve is somewhat deeper than curve 3. | |
| 5 |   | This can be used as a SINGLE Velocity switch when combined with curve 6. No sound is played if the key is struck with force. | |
| 6 |   | This can be used as a SINGLE Velocity switch when combined with curve 5. Sound is played only if the key is struck with force. | |
| 7 |   | With this curve, volume rises sharply at first, maintains a medium level, the sharply increases at maximum force. | |
| 8 |   | This curve stays low throughout much of the velocity range. It makes possible quiet, subtly expressive tones, and is appropriate for piano sounds. | |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## ■ KS (Keyboard Scaling) Chart

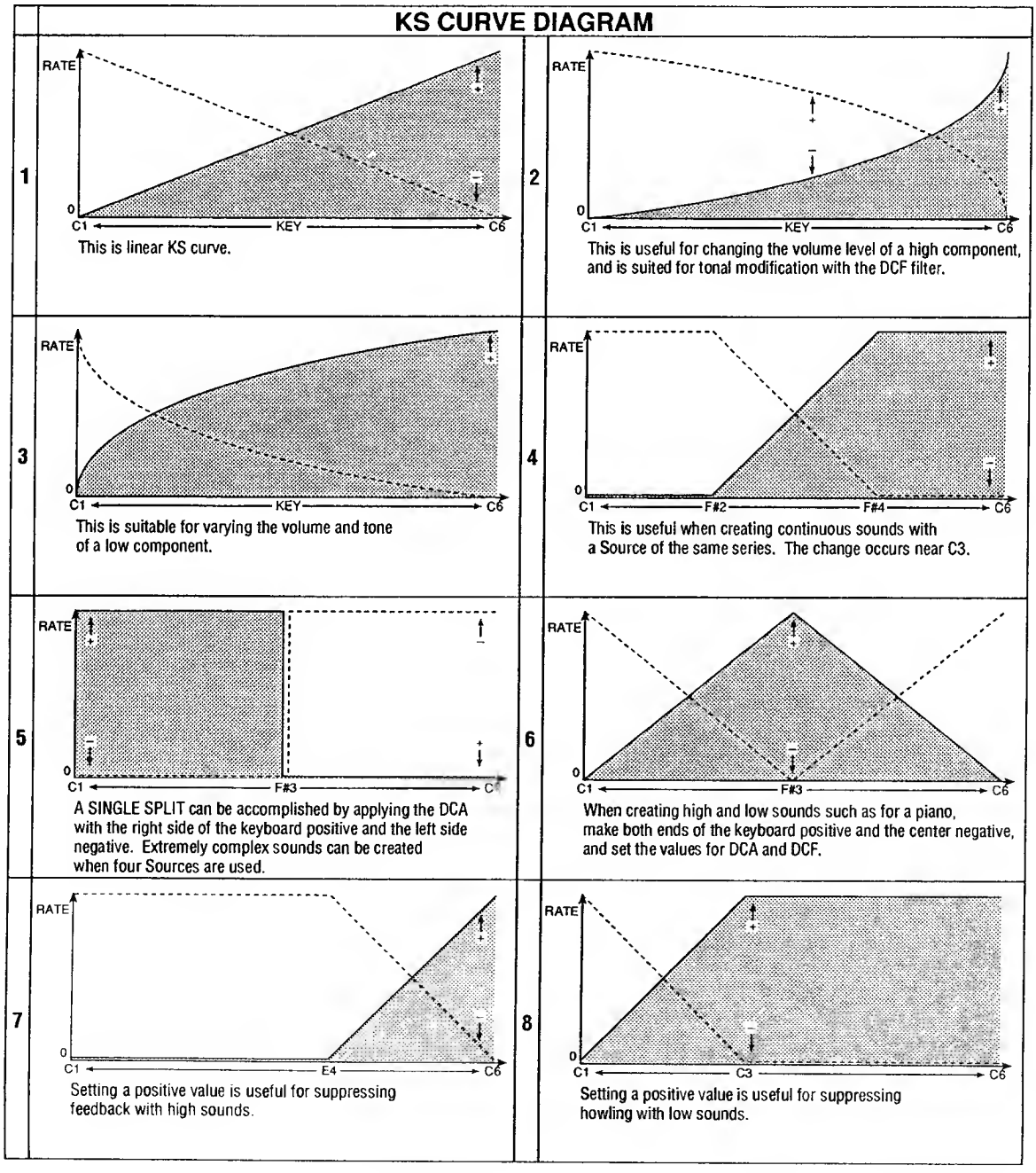
### ● KS (Keyboard Scaling) CURVE

(Value: 1 to 8)

This changes tone and volume according to the position of the key that is struck. You can select how these changes are made from the following eight curves.

*See "Editing Capabilities" on P. 57 for an explanation of how to copy.*

### KS CURVE DIAGRAM



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## ■ DCO Group

The DCO sets the values for waveform and pitch.

- WAVE
- KEY TRACK
- COARSE
- FINE
- FIXED KEY
- PRESSURE → Freq.
- VIBRATO/AUTO BEND

**● WAVE**

(Value: 1 to 96 (C), 97 to 256 (P))

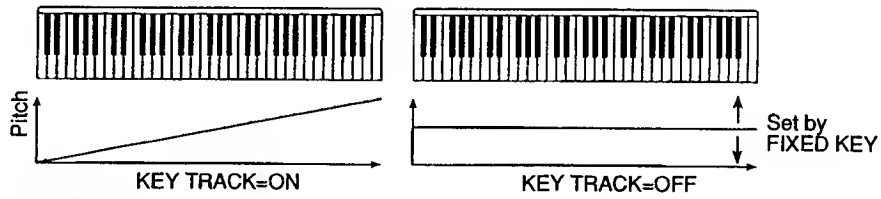
This selects the desired waveform for each Source from the 256 waveforms available.

*See the WAVE LIST packed with the unit for available waveforms.*

**● KEY TRACK**

(Value: ON or OFF)

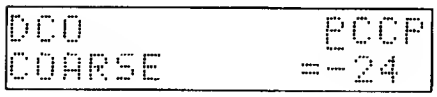
This selects whether pitch is to change depending on the key struck. The keys scale normally when ON, but will be fixed at the pitch specified by FIXED KEY when OFF. (See P. 47)




**● COARSE**

(Value: –24 to 0 to +24)

This sets the pitch of each Source in half steps. You can make settings within a range of two octaves up or down.




**● FINE**

(Value: –50 to 0 to +50)

Fine tune the pitch of the Sources.

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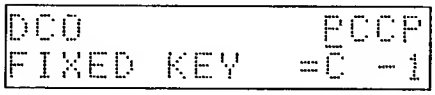
● **FIXED KEY**

(Value: C-1 to G8)

Fix the pitch of each Source to a particular pitch.




***Note:*** *This setting can only be made when KEY TRACK is OFF. (See P. 46)*

● **PRESSURE FREQUENCY**

(Value: ON or OFF)

This selects whether Aftertouch will affect the pitch.

***Note:*** *This is handy for violin, sax or other solo series tones.*

● **VIBRATO/AUTO BEND**

(Value: ON or OFF)

This selects whether Vibrato and Auto Bend will affect the pitch. (See P. 40)

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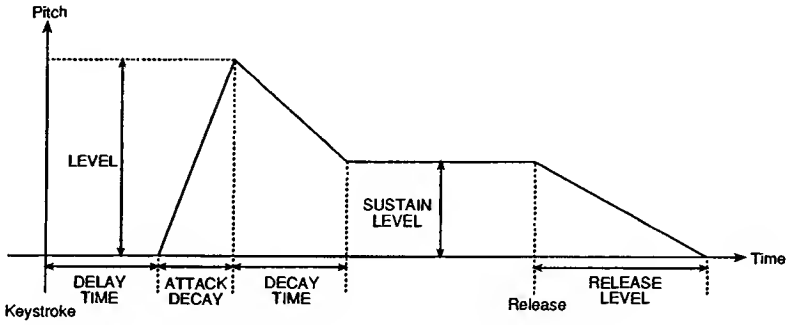
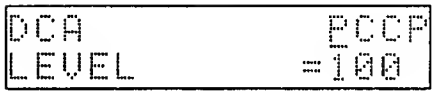
## ■ DCA Group

The DCA sets the values for volume of a sound over time.

- LEVEL
- ATTACK
- DECAY
- SUSTAIN
- RELEASE

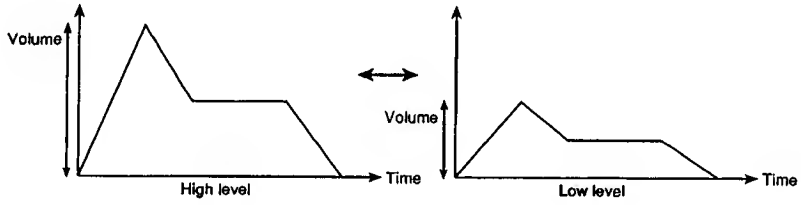



### ● LEVEL

(Value: 0 to 100)

This adjusts the initial level for each Source.

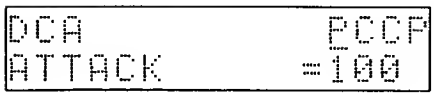



| Value | Effect |
|---|---|
| 0 | No output (mute) |
| ⌇ | ⌇ |
| 100 | Maximum level |

### ● ATTACK

(Value: 0 to 100)

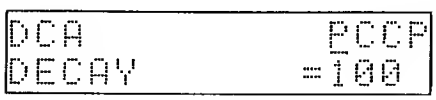
This sets the time from the start of the sound until peak volume is reached (for each Source).




### ● DECAY

(Value: 0 to 100)

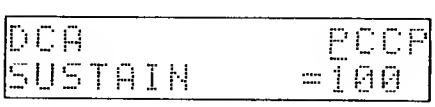
This sets the time from peak volume to the sustain level (for each source).




### ● SUSTAIN

(Value: 0 to 100)

This sets the stable level which will be maintained as long as the key is held down (for each Source).





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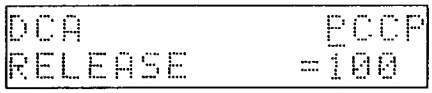
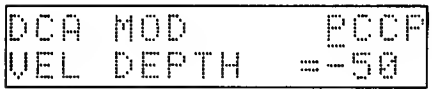



● **RELEASE**
(Value: 0 to 100)
This sets the time from the point when the key is released until the sound disappears (for each Source).

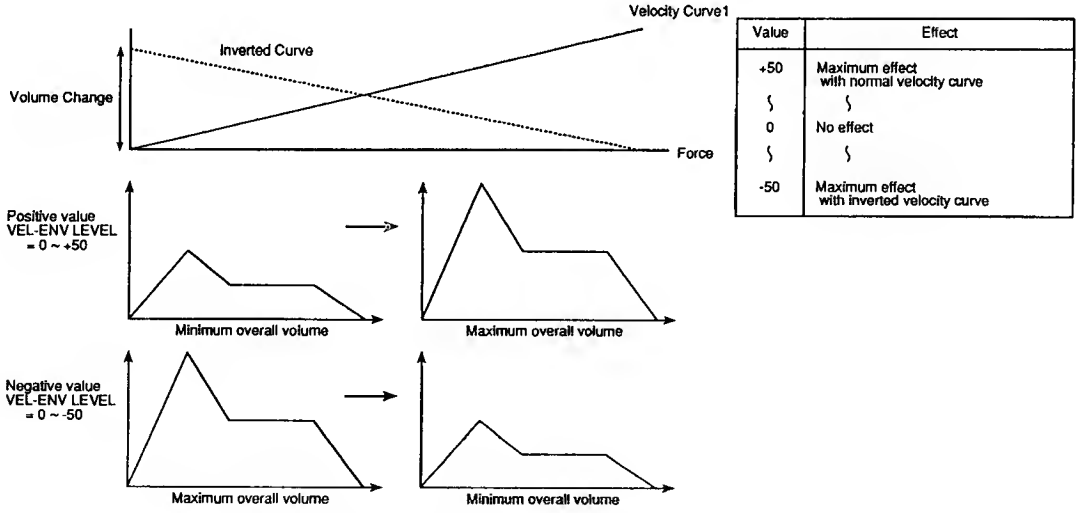
## ■ DCA MODULATION (DCA MOD) Group

The DCA MOD is used to modulate the level with the keys.
- VEL DEPTH
- PRESSURE DEPTH
- KS DEPTH
- TIME MODULATION VELOCITY
- TIME MODULATION RELEASE VELOCITY
- TIME MODULATION KS




● **VEL (Velocity) DEPTH**
(Value: –50 to 0 to +50)
This adjusts the amount of change in volume by how hard the key is struck (for each Source). Setting a negative value makes the sound quieter the harder you hit the key.

***Note:*** *This sets the change according to the S-COMMON Velocity Curve. (See P. 44)*



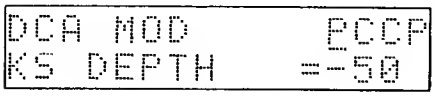

| Value | Effect |
|---|---|
| +50 | Maximum effect with normal velocity curve |
| ⌇ | ⌇ |
| 0 | No effect |
| ⌇ | ⌇ |
| -50 | Maximum effect with inverted velocity curve |

● **PRESSURE DEPTH**
(Value: –50 to 0 to +50)
This adjusts the volume according to how hard the key is pressed (for each Source). Setting a negative value makes the sound quieter the harder you press the key.

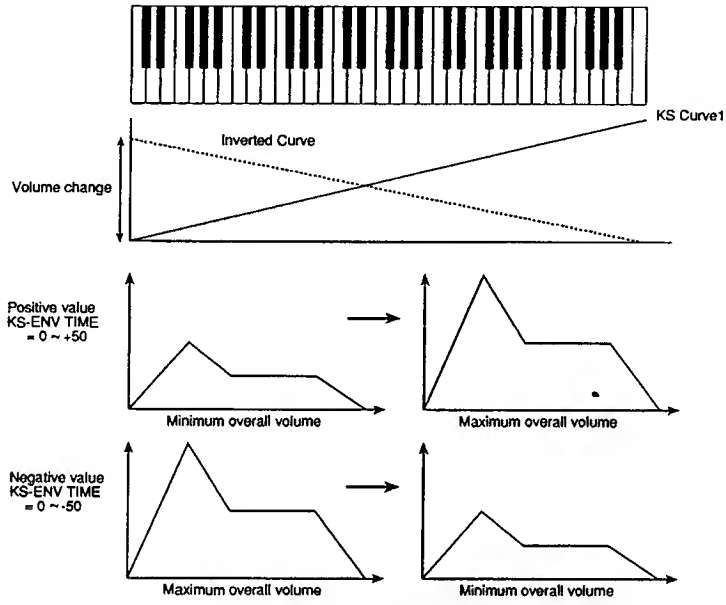
50

### ● KS (Keyboard Scaling) DEPTH

(Value: –50 to 0 to +50)



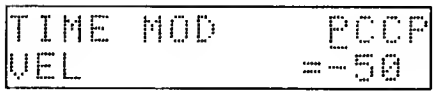

This changes the volume level according to the position of the struck key (for each Source). Setting a positive value increases the volume according to the KS Curve set with S-COMMON, while a negative value will decrease the volume according to the inverse of the KS Curve. (See P. 45)



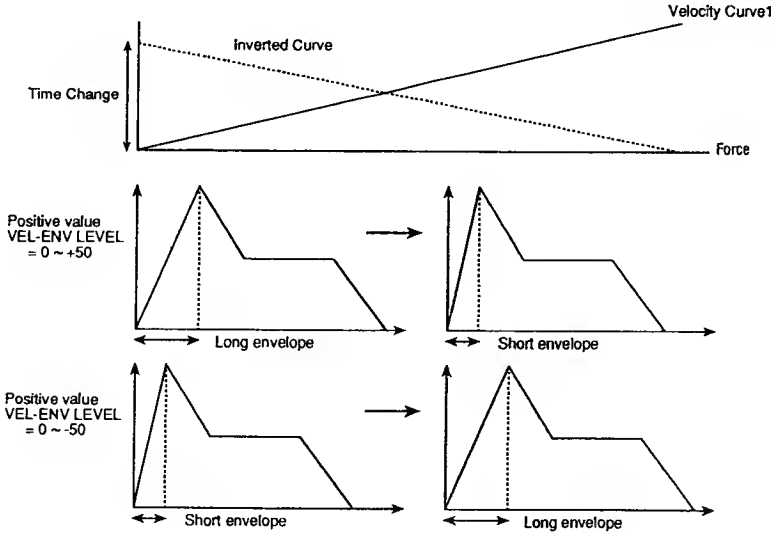

| Value | Effect |
|---|---|
| +50 | Maximum effect with normal KS curve |
| ⌇ | ⌇ |
| 0 | No effect |
| ⌇ | ⌇ |
| -50 | Maximum effect with inverted KS curve |

### ● TIME MODULATION VELOCITY (VEL)

(Value: –50 to 0 to +50)




This controls the envelope time according to how hard the key is struck (for each Source). Setting a positive value changes the attack according to the Velocity Curve set with S-COMMON, while a negative value will change the attack according to the inverse of the Velocity Curve. (See P. 44)

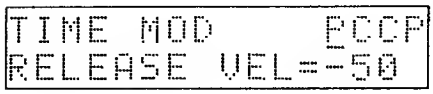



| Value | Effect |
|---|---|
| +50 | Maximum effect with normal velocity curve |
| ⌇ | ⌇ |
| 0 | No effect |
| ⌇ | ⌇ |
| -50 | Maximum effect with inverted velocity curve |

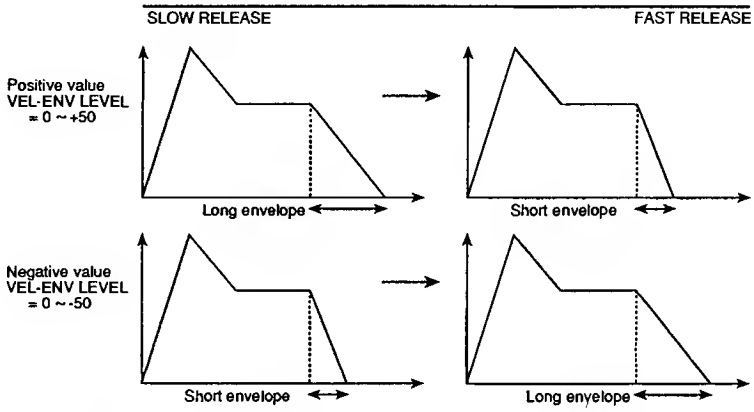

50

### ● TIME MODULATION RELEASE VELOCITY

(Value: –50 to 0 to +50)

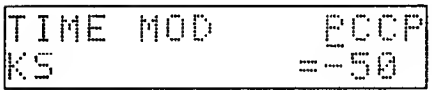



This adjusts the release time according to how hard the key is struck (for each Source).

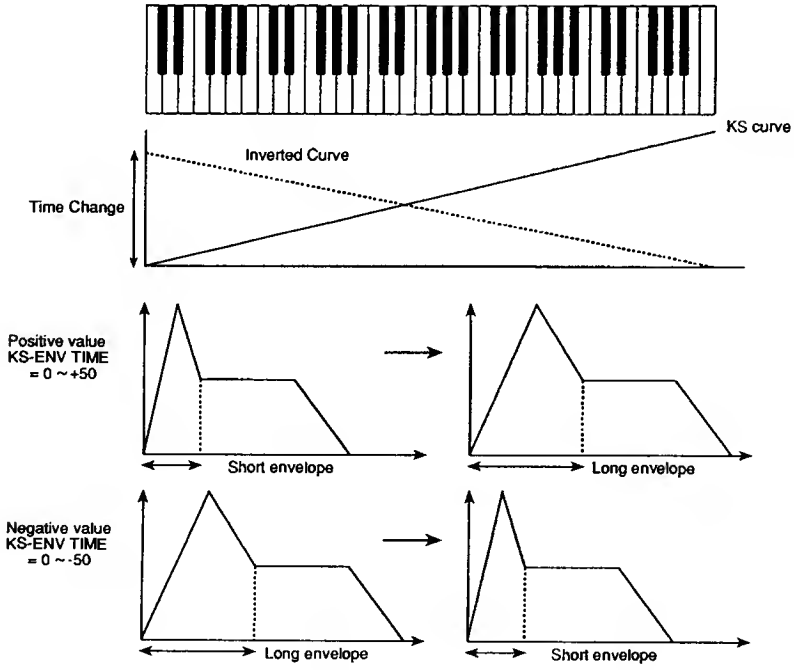



### ● TIME MODULATION KS

(Value: –50 to 0 to +50)




This changes the attack and decay times of the envelope according to the position of the key struck (for each Source). Setting a positive value makes these changes according to the KS Curve set with S-COMMON, while a negative value will make changes according to the inverse of the KS Curve. (See P. 45)




| Value | Effect |
|---|---|
| +50 | Maximum effect with normal KS curve |
| ⟆ | ⟆ |
| 0 | No effect |
| ⟆ | ⟆ |
| -50 | Maximum effect with inverted KS curve |

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## ■ DCF Group

The DCF sets the values for the tone filter.

- CUTOFF
- RESONANCE
- VELOCITY DEPTH
- PRESSURE DEPTH
- KS DEPTH
- LFO

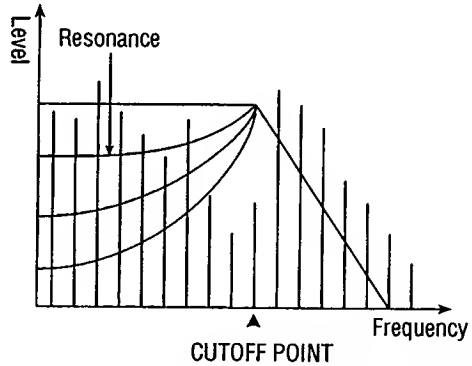
> ***Note:*** *When in the TWIN Source mode, select the Filter by pressing a Source Select (1 to 4). You can select the Filters for Sources 1 and 2 with switches 1 and 2, and the Filters for Sources 3 and 4 with switches 3 and 4.*

### ● CUTOFF

(Value: 0 to 100)

```
DCF                PCCP
CUTOFF             =100
```

The basic function is the same as an analog Low Pass Filter. A tone generator waveform containing many harmonics is adjusted by a Low Pass Filter, which cuts off all harmonics above a specified Cutoff value. The higher this value is, the more brilliant the sound.




CUTOFF POINT
(Harmonics with frequencies higher than this value are Cutoff.)

> ***Note:*** *No sound will be played if you set this value too low.*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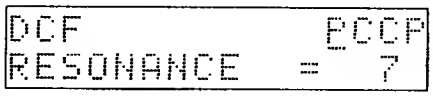


**● RESONANCE**

(Value: 0 to 3 (NORM, TWIN), 0 to 7 (DBL))

This sets the level near the Cutoff Frequency. The larger you set this value, the more emphasis is given to the particular harmonic, resulting in a sharp, ringing tone.

> ***Note:*** *Especially sharp timbres can be created in the DOUBLE Source mode. The tone will be distorted if you set this value too high.*

**● VELOCITY DEPTH (VEL DEPTH)**

(Value: –50 to 0 to +50)

This adjusts the amount Velocity Modulation of the filter Cutoff Frequency. Setting a positive value makes the sound brighter the harder the key is struck. Setting a negative value makes the sound less brilliant the harder the key is struck. (See P. 44)

**● PRESSURE DEPTH**

(Value: –50 to 0 to +50)

This adjusts the Cutoff according to how hard the key is pressed. Setting a positive value makes the sound brighter the harder you press the key. Setting a negative value makes the sound less brilliant the harder you press the key.

**● KS DEPTH**

(Value: –50 to 0 to +50)

This changes the Cutoff according to the position of the struck key. Setting a positive value changes the tone according to the KS Curve set with S-COMMON, while a negative value will change the tone according to the inverse of the KS Curve. (See P. 45)

> ***Note:*** *For NORMAL and DOUBLE this is according to the KS Curve selected for Source 1, and for TWIN this is according to the KS Curve selected for Sources 1 and 3.*

**● LFO**

(Value: ON or OFF)

This selects whether the Cutoff Frequency will be modulated by the LFO. The speed of tone oscillation is set with the LFO. (See P. 40)

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## ■ DCF MODULATION (DCF MOD) Group

These settings are used when changing the tone with an envelope (temporal change). The Cutoff Point set for DCF is taken as a standard (Level 0) for making changes in level over time.

- ENVELOPE DEPTH
- VELOCITY DEPTH
- ATTACK
- DECAY
- SUSTAIN
- RELEASE
- TIME MODULATION VELOCITY
- TIME MODULATION RELEASE VELOCITY
- TIME MODULATION KS

When in the TWIN Source mode, select the Filter by pressing a Source Select (1 to 4) in the same way as you did for editing with the DCF. You can select the Filters for Sources 1 and 2 with switches 1 and 2, and the Filters for Sources 3 and 4 with switches 3 and 4.

> ***Note:*** *For NORMAL and DOUBLE this is according to the Delay, Velocity Curve and KS Curve selected for Source 1, and for TWIN this is according to the Delay, Velocity Curve and KS Curve selected for Sources 1 and 3.*

### ● ENVELOPE DEPTH

(Value: –50 to 0 to +50)

This sets the amount of Cutoff Modulation by the DCF's envelope. Setting a positive value raises the Cutoff Frequency as the level of the envelope curve becomes higher, for a brighter sound. Setting a negative value lowers the Cutoff Frequency as the level of the envelope curve becomes higher, for a less brilliant tone.


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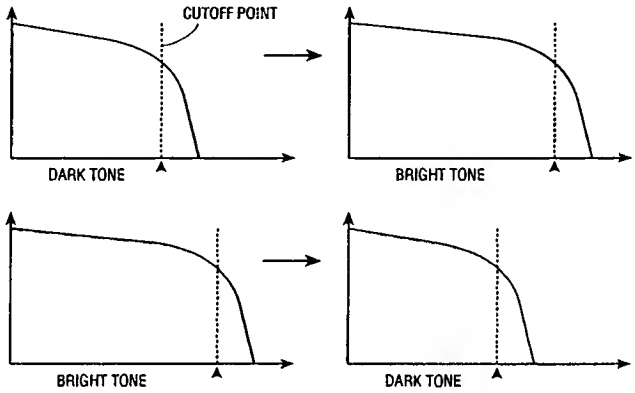
SINGLE EDIT

DCF MOD PCCP
VEL DEPTH =-50

**● VELOCITY DEPTH (VEL DEPTH)**

(Value: –50 to 0 to +50)

This controls the envelope level according to how hard the key is struck. The change is according to the Velocity Curve set for S-COMMON. (See P. 44)




DCF MOD PCCP
ATTACK =100

**● ATTACK**

(Value: 0 to 100)

This sets the speed of the envelope attack. The larger the value, the slower the tone will change.

DCF MOD PCCP
DECAY =100

**● DECAY**

(Value: 0 to 100)

This sets the time until the attack level drops to a sustained Cutoff Frequency level.

DCF MOD PCCP
SUSTAIN =-50

**● SUSTAIN**

(Value: 0 to 100)

This sets the Cutoff Frequency level which will be maintained until the key is released.

DCF MOD PCCP
RELEASE =100

**● RELEASE**

(Value: 0 to 100)

This sets the time from the point when the key is released until the envelope level drops to zero. If the key is released before the tone rises to the Sustain level, the level will dwindle to zero from its current value at the time set for Release.

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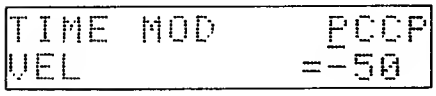
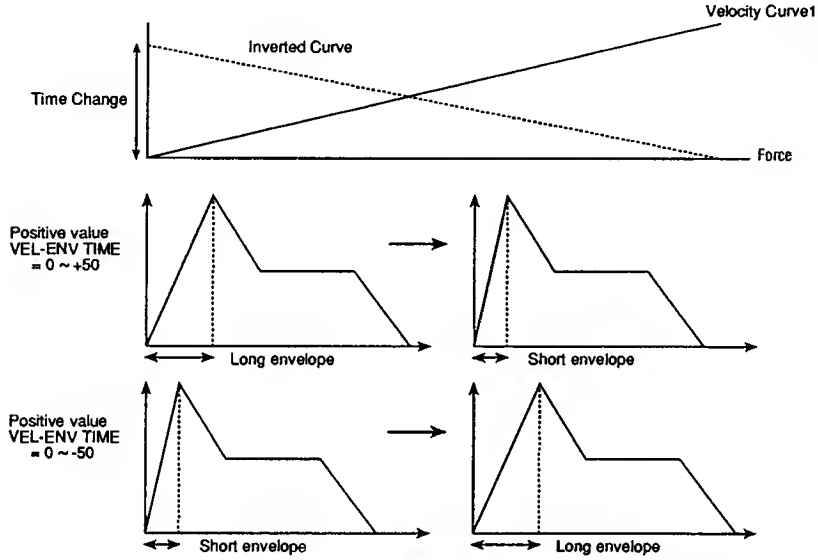
## ● TIME MODULATION VELOCITY (ATTACK)

(Value: –50 to 0 to +50)




This adjusts the attack time according to how hard the key is struck. Setting a positive value changes the attack according to the Velocity Curve set with S-COMMON, while a negative value will change the attack according to the inverse of the Velocity Curve. (See P. 44)

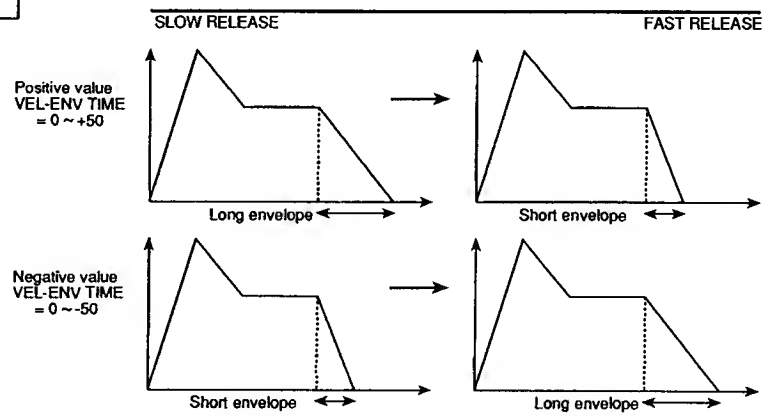



| Value | Effect |
|---|---|
| +50 | Maximum effect with normal velocity curve |
| ⟆ | ⟆ |
| 0 | No effect |
| ⟆ | ⟆ |
| -50 | Maximum effect with inverted velocity curve |

## ● TIME MODULATION RELEASE VELOCITY

(Value: –50 to 0 to +50)

This adjusts the release time according to how fast the key is released.





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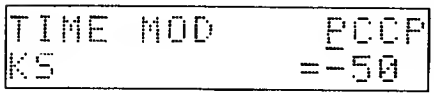
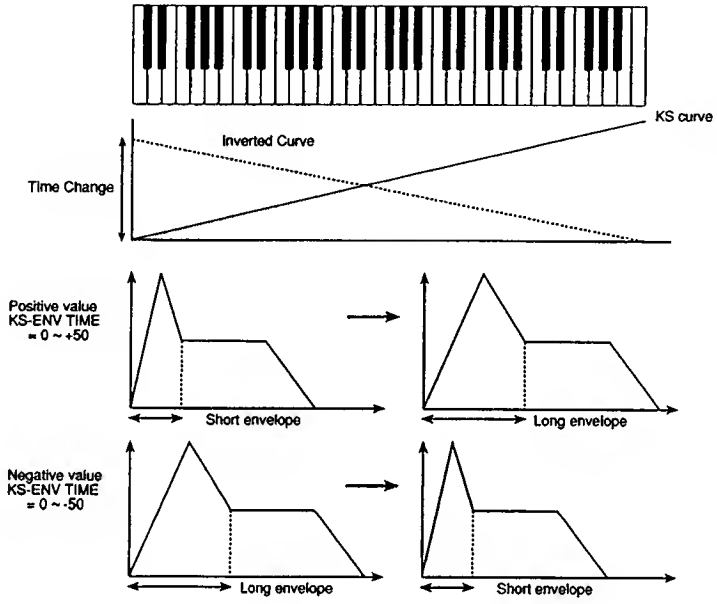



**● TIME MODULATION KS**

(Value: –50 to 0 to +50)

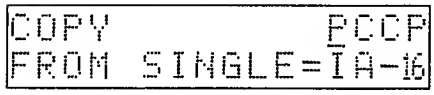
This changes the attack and decay times of the envelope according to the position of the key struck. Setting a positive value makes these changes according to the KS Curve set with S-COMMON, while a negative value will make changes according to the inverse of the KS Curve. (See P. 45)




| Value | Effect |
|---|---|
| +50 | Maximum effect with normal KS curve |
| ⌇ | ⌇ |
| 0 | No effect |
| ⌇ | ⌇ |
| -50 | Maximum effect with inverted KS curve |

## ■ Editing Capabilities

The COPY function is a handy shortcut if there is a Source or Filter similar to the one you want to use in a different patch or even the current patch.
First of all, select the patch containing the Source or Filter you want to use.




**<Procedure>**

(1) Press the (6 S-COMMON) several times until the PATCH SELECT display is displayed.

(2) Select the patch with the VALUE Slider or (+YES) and (-NO).

(3) Next, select the Source or Filter that you want to copy. Values are as follows.

S1: Copy the entire contents of Source 1.
⋮
S4: Copy the entire contents of Source 4.
⋮
F1: Copy the entire contents of Filter 1.
F2: Copy the entire contents of Filter 2.

***Note:*** *The COPY function copies from a patch as stored in memory. If you want to copy a Source or Filter from a patch being edited, write it to memory before performing the COPY.*

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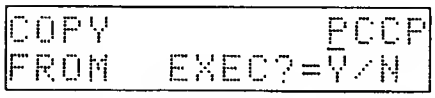
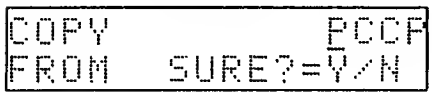
**<Procedure>**

(1) Press the (6 S-COMMON) several times until SOURCE SELECT is displayed.

(2) Select the Source or Filter with the VALUE Slider.




(3) The message "EXEC?" will then appear. Press (+YES) to copy or (-NO) to cancel.




(4) If you pressed (+YES) in step (3), the message "SURE?" will appear to ask you for confirmation. Press (+YES) to copy or (-NO) to cancel.

## ■ Writing a SINGLE Patch

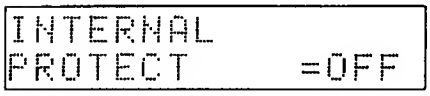
This is done to store the edited patch in memory.

If you write the data any data previously stored will be written over. Save patches you don't want to lose on the optionally available card (DC-16), or store it in a computer or sequencer such as the Q-80 using the MIDI DATA DUMP. (See P. 82)

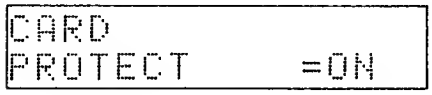
***Note:*** *Press the (RECALL) if you mistakenly leave the EDIT mode. The screen shown left will be displayed, and you can return to the mode you left by pressing the (EDIT).*

**<Procedure>**

***Note:*** *First of all, turn off the PROTECT for the unit (or card) so that writing can be done.*




(1) While in the SINGLE EDIT mode, press the (WRITE) several times to display the PROTECT screen.




(2) Press the (-NO) to turn off the PROTECT.

(3) Press the (WRITE) several times to display the WRITE screen.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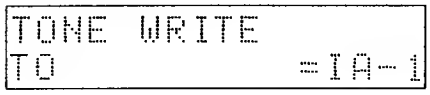
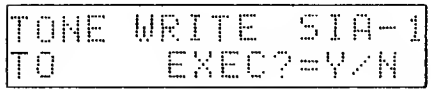



(4) Use the VALUE Slider or the (+YES) and (-NO) to select the number of the patch to be written, and then press the (WRITE).

(5) The message "EXEC?" will then appear. Press (+YES) to execute writing or (-NO) to cancel.




(6) If you pressed (+YES) in step (5), the message "SURE?" will appear to ask you for confirmation. Press (+YES) to execute writing or (-NO) to cancel.

(7) Press the (WRITE) several times to display the PROTECT screen, and then turn the PROTECT switch back on.

***Note:*** *A new card must be formatted before it can be written to (P. 26).*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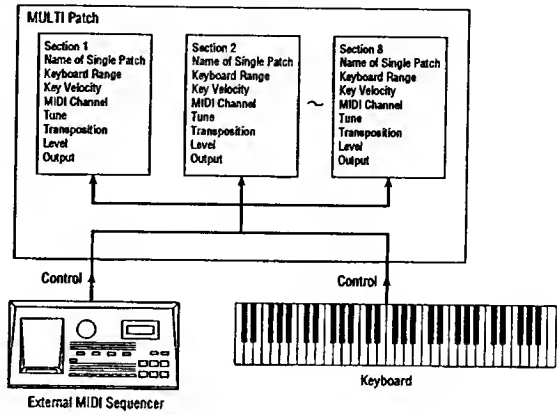
# 2-6. Editing a MULTI Patch

## 1. MULTI Patch Configuration

A MULTI Patch is a combination of up to eight SINGLE Patches. A MULTI Patch is divided into Sections which each consist of a SINGLE Patch plus various parameters that tie sound generation to Key Velocity, Keyboard Range, MIDI Channel, Tuning, Transposition, Level, and Output to play various sounds using the keyboard or MIDI.




## 2. Using MULTI Patches

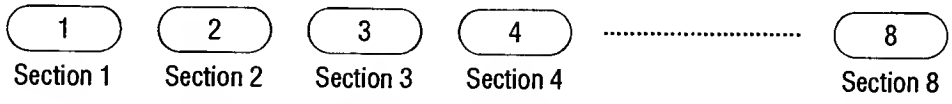
MULTI Patches have no parameters for creating tones – MULTI Patch parameters are used to set how the tone of each Section is to be played. A number of tones can be played at the same time by setting all parameters but the tone name to the same values. A Velocity switch, where a different tone is played depending on how hard the key is struck, can be created by changing only the Velocity value. A detuned effect can be obtained by varying the pitch by a slight amount. Many tones can be played independently from a sequencer or computer by setting each to a different MIDI channel. By manipulating the MULTI Patch settings in this way, you can add a wide variety of effects to your performances.

## 3. Choosing a Section to Edit

This is used when editing Sections individually.

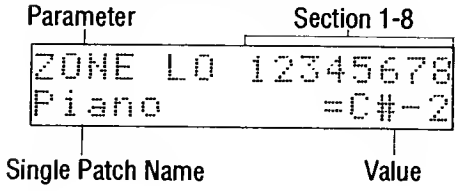
**<Procedure>**

(1) Select the Section to be edited with the Section Select keys (1 through 8).




(2) If you want to listen to the Section sounds individually, press the appropriate Section Mute (9 through 16) to temporarily cancel the sound of the other Sections.

### ■ Display During Editing




1–16: The MIDI channel of each Section
–: Muted Section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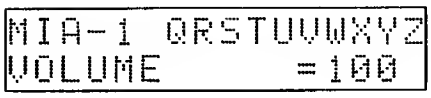
# 4. Editing Section Parameters

## ■ EDIT Group

Sets common Section parameters.
- VOLUME
- EFFECT (K4)/OUTPUT (K4r) Patch
- NAME




**● VOLUME**
(Value: 0 to 100)
This controls the volume of the entire MULTI Patch. Adjust the differences in volume between patches so that there is no unnatural change in loudness when patches are switched.

**● EFFECT Patch (OUTPUT Patch)**
(Value: 1-32)
Select the EFFECT to be used from the 32 EFFECT Patches previously set (K4 only – OUTPUT Setting is used on the K4r). (See P. 24, 71)

**● NAME (1st through 10th)**
Name the edited MULTI Patch. Up to 10 characters can be utilized, in the same way as for SINGLE Patches.

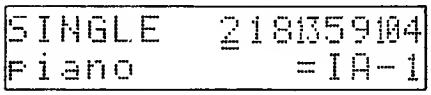
## ■ INST Group

Select the SINGLE Patches to be used in the Sections.

### ● SINGLE Patch Selection

**● SINGLE**
(Value: INT – IA-1 to ID-16, EXT – EA-1 to ED-16)
Select SINGLE Patches.

> ***Note:*** *The unit's internal MULTI Patches cannot use SINGLE Patches on the cards. Similarly, the card's MULTI Patches cannot use the machine's internal SINGLE Patches.*




Use the VALUE Slider or (+YES) and (-NO) to select the SINGLE Patch. Switches A through D are used to select the EDIT parameters, and 1 through 16 are used to select Sections and for muting.

> ***Note:*** *Since SINGLE tones used in a MULTI Patch are controlled by patch numbers, changing the contents of a SINGLE Patch will also change the sound within the MULTI Patch.*

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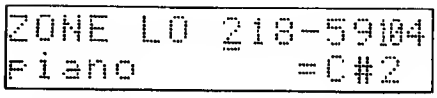
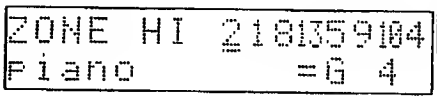
## ■ ZONE Group

This sets the range for each Section.

- ZONE LO
- ZONE HI
- VEL SW



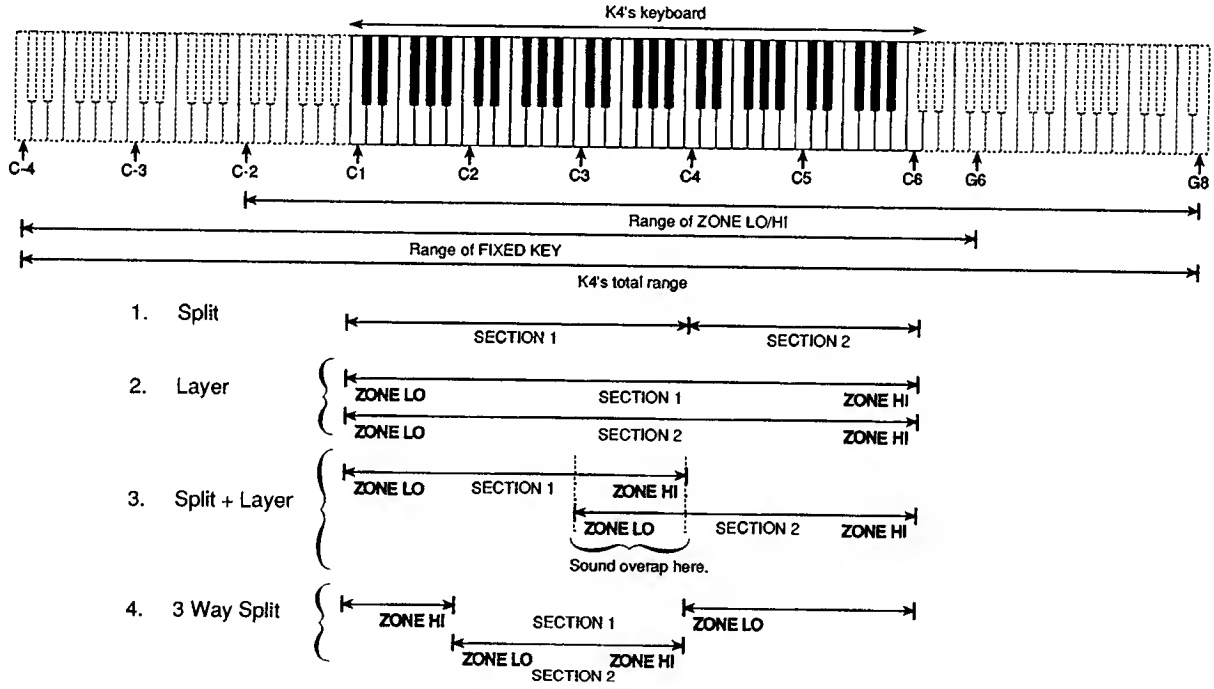




### ● ZONE LO/HI

(Value: C-2 to G8)

Set the upper and lower limits for the tone range of the Sections.

> ***Note:*** *Setting ZONE LO to a higher value than ZONE HI causes the middle range to be silent, with both the upper and lower ends played.*



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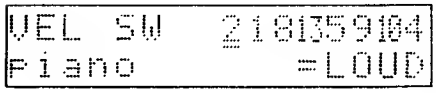
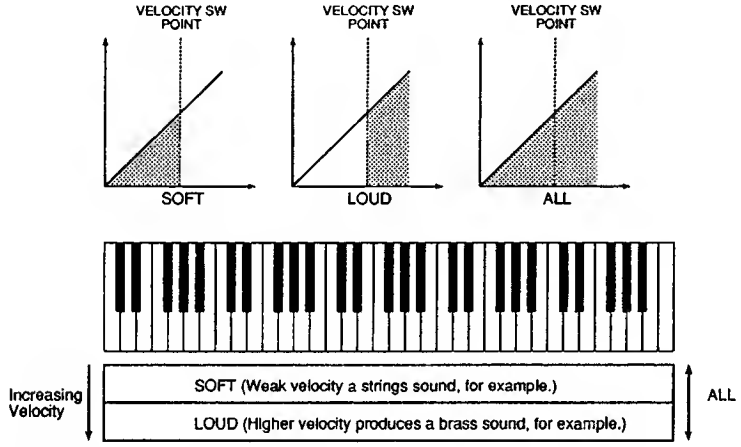



● **VEL SW (Velocity Switch)**

(Value: SOFT, LOUD, or ALL)

You can switch tones according to how hard you hit the keys (Velocity switch) by changing this setting for the Sections.

> ***Notes:*** *SOFT: Played only when keys are lightly struck*
> *LOUD: Played only when keys are struck heavily*
> *ALL: Played under all conditions*
>
> *The velocity switch point at which switching between SOFT and LOUD takes place is set using SYSTEM/VEL SW POINT. (See P. 77)*

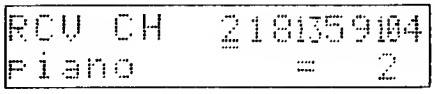



| Value | Effect |
|---|---|
| ALL | All strikes produce a sound. |
| SOFT | Only weak strike produces a sound. |
| LOUD | Only hard strike produces a sound. |

## ■ SEC Ch (Section Channel) Group

Set the MIDI channels for the Sections.

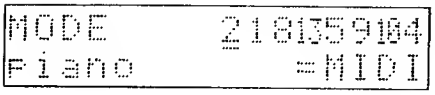
- RCV Ch
- PLAY Mode




● **RCV Ch (Receiving channel)**

(Value: 1 through 16)

Set the MIDI receiving channel for each Sections.




● **PLAY Mode**

(Value: KYBD, MIDI, MIX)

Sets the section to play from the keyboard (KYBD), from MIDI, or both (MIX).

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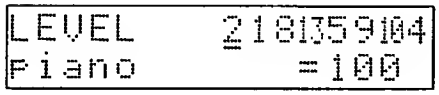
## ■ LEVEL Group

Set the level and other parameters for Sections.

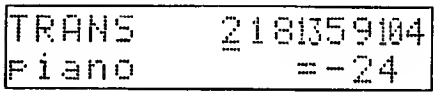
- LEVEL
- TRANSPOSE
- TUNE
- SUBMIX CH




**● LEVEL**

Value: 0 through 100)

Set the level for each Section.



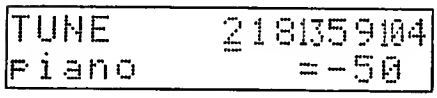

**● TRANSPOSE**

(Value: –24 to 0 to +24)

This transposes the pitch of the Sections up or down in half steps. By layering a Section in normal pitch with Sections transposed by five and 12 half steps, you can play harmonies in a fifth and a full octave with one finger.

Settings can be made within a range of two octaves.

> ***Note:*** *TRANSPOSE does not effect SINGLE Patches with the DCO key track OFF. (See P. 46)*

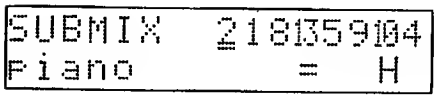



**● TUNE**

(Value: –50 to 0 to +50)

This performs fine tuning for Section pitches. You can create a thicker sound by slightly varying the pitch of several Sections with the same tone.

Settings can be made within a range of one half tone.




**● SUBMIX CH**

(Value: A through H)

Within an EFFECT or OUTPUT Setting, you can set eight types of SUBMIX CHes which determine the level of the effect and the orientation of the sound image. Here, the mode to be used by each Section is selected from among these eight settings. (See P. 24, 71)



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## ■ Writing MULTI Patches

Save the edited patch in memory.

***Notes:*** *Press the (RECALL) if you mistakenly leave the EDIT mode. The screen shown left will be displayed, and you can return to the mode you left by pressing the (EDIT).*

*If you write the data any data previously stored will be written over. Save patches you don't want to lose on the optionally available card (DC-16), or store them in a computer or sequencer such as the Q-80 using the MIDI DATA DUMP. (See P. 27, 82)*

*Make sure that the PROTECT is OFF, and perform the following procedure.*

```
RECALL
```

**<Procedure>**

```
TONE WRITE
TO              =IA-1
```

(1) Press the (WRITE) to display the following screen.

(2) Select the number of the patch you want to write with the VALUE Slider, and press (WRITE).

(3) The message "EXEC?" will then appear. Press (+YES) to execute writing or (-NO) to cancel.

(4) If you pressed (+YES) in step (3), the message "SURE?" will appear to ask you for confirmation. Press (+YES) to execute writing or (-NO) to cancel.

If necessary, set the PROTECT to ON.

***Note:*** *A new card must be formatted before it can be written to. (See P. 26)*

MULTI EDIT

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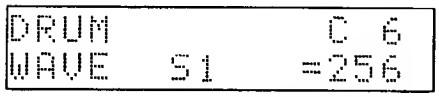
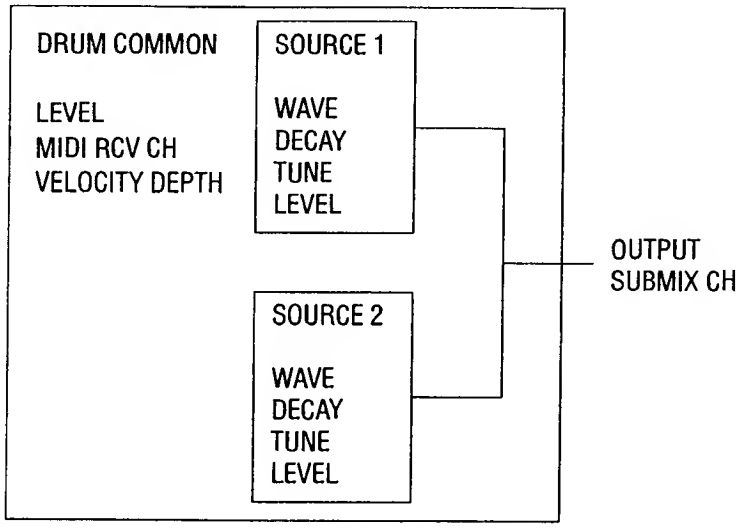
# 2-7. Editing Sounds for the DRUM Section

## 1. DRUM Section Configuration

The DRUM Section is a tone generator Section for rhythm which is different from the tone generator for SINGLE and MULTI Patches. A set of 61 patches, one for each key C1 through C6 (MIDI note numbers 36 through 96) can be programmed and played simultaneously with the SIINGLE and MULTI Patches. The DRUM Section is also programmed on the card and either the internal or external one can be used. The maximum number of notes that can be played at the same time, including SINGLE and MULTI Patches, is 16.




The DRUM Section utilizes two Sources for each key, and settings for Wave, Decay, Tune, and Level can be made for each Source.




***Note:*** *The EFFECT and SUBMIX CH Settings for the DRUM Section use the EFFECT Settings for the currently selected SINGLE or MULTI Patch (K4 only – OUTPUT values Stereo L R, 1 ~ 6 are used for the K4r).*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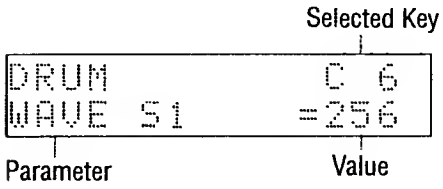
## ■ EDIT Screen




## ■ EDIT Procedure

### Common Parameters

**● VOLUME**

(Value: 0 to 100)

This controls the volume of the entire DRUM Section. Adjust the differences in volume for SINGLE Patch and MULTI Patch Sections so that there is no unnatural change in loudness when the DRUM Section is called up.

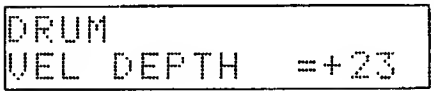
***Note:*** *The (RECALL COMPARE) also works during DRUM EDIT to allow the sound being created to be compared with the sound before editing.*

**● MIDI RCV Ch (Receiving channel)**

(Value: 1 through 16)

Set the MIDI receiving channel for the DRUM Section.

***Note:*** *This is independent of the OMNI ON/OFF for SYSTEM/MIDI. (See P. 79)*




**● VEL (Velocity) DEPTH**

(Value: –50 to 0 to +50)

Sets the depth of level change according to how hard the key is struck.

DRUM EDIT

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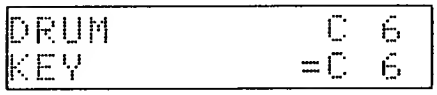
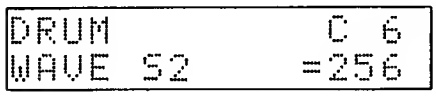
# 2. Creating DRUM Section Tones




● **KEY**
(Value: C1 to C6)
Designate the keys to be set.

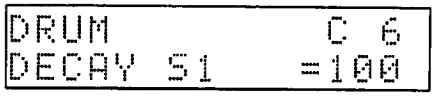
***Note:*** *The key to be set can also be selected by pressing the desired key directly, in any of the DRUM Section EDIT screens.*

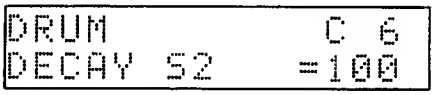
● **WAVE S1 and S2**
(Value: 1 through 256)
Designate the WAVEs for Sources 1 and 2.



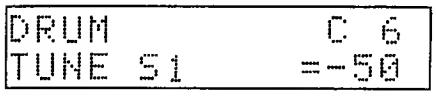

***Note:*** *The same waveforms available for SINGLE Patches (1 to 256) can be used.*

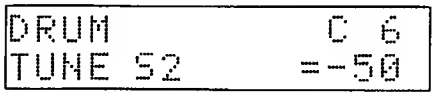
● **DECAY S1 and S2**
(Value: 1 to 100)
Set the DECAY for Sources 1 and 2.



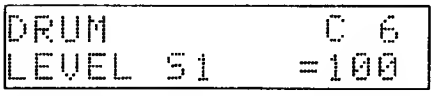



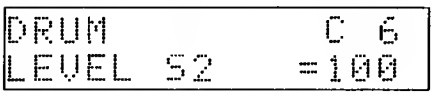

● **TUNE**
(Value: –50 to 0 to +50)
Adjust the pitch of the Sources. Settings can be made within a range of one octave up or down.



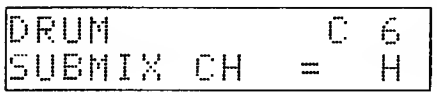




● **LEVEL**
(Value: 0 to 100)
Adjust the volume levels for the Sources.




● **SUBMIX CH**
(Value: A to H)
Within an EFFECT (OUTPUT) Setting, you can set eight types of SUBMIX CHes which determine the level of the effect and the orientation of the sound image. Here, the SUBMIX CH to be used as the instrument (DRUM) to be allotted to each key is selected from among these eight settings. (See P.24, 71)





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● **COPY**

(Value: C1 to C6)

You can copy the settings made from another other key. For example, to create a tomtom sound that is identical with another setting except for pitch, you can skip the trouble of creating the second setting from scratch by copying the first one and changing only the pitch.

**<Procedure>**

(1) Select the key to be copied to (by pressing it).
(2) Press the (DRUM) several times to display the COPY screen.
(3) Select the key you want to copy by pressing it, and then press the (DRUM).
(4) The message "EXEC?" will then appear. Press (+YES) to copy or (-NO) to cancel.
(5) If you pressed (+YES) in step (4), the message "SURE?" will appear to ask you for confirmation. Press (+YES) to copy or (-NO) to cancel.

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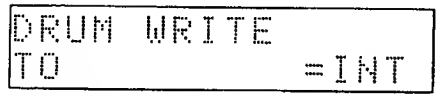
# 3. Writing the DRUM Section to memory

Save the edited DRUM Section in memory.

> ***Note:*** *If you write the data any data previously stored will be written over. Save DRUM Section data you don't want to lose on the optionally available Card (DC-16), or store it in a computer or sequencer such as the Q-80 using the MIDI DATA DUMP. (See P. 82)*

**<Procedure>**

> ***Note:*** *Make sure that the PROTECT is OFF, and perform the following procedure.*




(1) Press the (WRITE) to display the following screen.

(2) Select INT (internal) or EXT (card) with the VALUE Slider or (+YES) and (-NO), and then press the (WRITE).

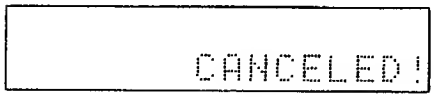
(3) The message "EXEC?" will then appear. Press (+YES) to execute writing or (-NO) to cancel.

(4) If you pressed (+YES) in step (3), the message "SURE?" will appear to ask you for confirmation. Press (+YES) to execute writing or (-NO) to cancel.

> ***Note:*** *If necessary, set the PROTECT to OFF.*
>
> *A new card must be formatted before it can be written to (See P. 26).*

(+YES)

(-NO)





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# 2-8. EFFECT (K4) and OUTPUT (K4r) Settings

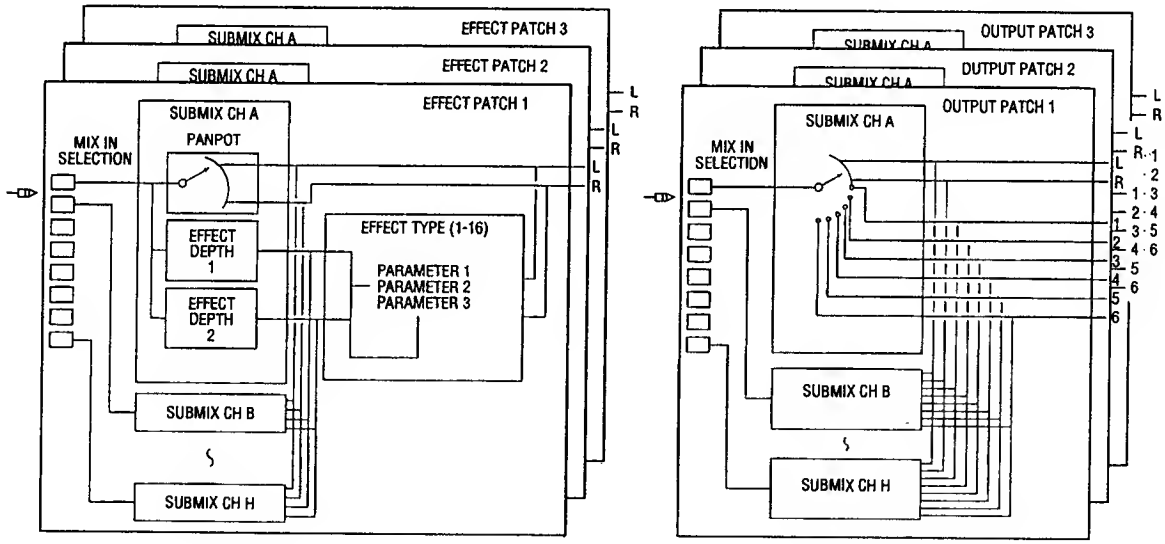
## 1. EFFECT Patches (K4 only)

The K4 can store 32 EFFECT Patches internally and 32 more on a card. An EFFECT Patches can be selected as any one of the 16 DIGITAL EFFECTs of the K4 and added to the desired tone.
In addition to this, eight types of SUBMIX CHes can be stored for an EFFECT Patches. The Stereo Orientation (PAN) and Level of the Effect (EFFECT SEND) are stored for each SUBMIX CH (PAN only for the K4r).
Selecting an EFFECT Setting for a SINGLE Patch means to specify which EFFECT will be applied to the patch, and selecting the SUBMIX CHes for an EFFECT Setting means to specify the Level of the Effect as well as its sound image orientation.
PAN and EFFECT DEPTH can be selected as desired for each SUBMIX CH. You can select only one EFFECT Setting for an entire MULTI Patch, but you can set a SUBMIX CH for each of the Sections (1 through 8).

The EFFECT and SUBMIX CH Settings for the DRUM Section use the EFFECT Settings for the currently selected SINGLE or MULTI Patch (K4 only – OUTPUT values are used for the K4r).

## 2. OUTPUT Patches (K4r only)

While the K4r has no EFFECTs, it is equipped with six independent OUTPUT jacks as well as left and right Stereo jacks (the K4 has only left and right Stereo jacks). The OUTPUT Patch is where data on how SINGLE Patches, MULTI Patches, and the DRUM Section are connected to these eight output jacks is stored. The only parameter within SUBMIX CHes is PAN. The K4r can be used in the same way as the K4.




EFFECT PATCH (K4) OUTPUT PATCH (K4r)

***Note:*** *By using headphones, you can monitor the sound of the right and left outputs, although the Individual Outputs (1–6) can not be heard. (K4r)*

*With VOLUME Slider, you can control the output level of the R/MONO, & L and PHONES outputs. The Individual Outputs are not affected. (K4r)*

EFFECT OUTPUT EDIT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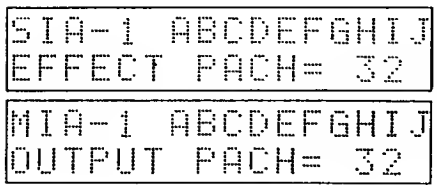
# 3. Programming Parameters




**<Procedure>**

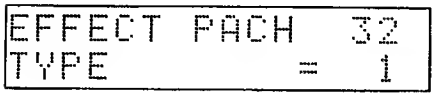
(1) Select the EFFECT (K4) or OUTPUT (K4r) Setting while in the SINGLE or MULTI EDIT mode. (See P. 33, 61)

(2) Press the (EFFECT) (or (OUTPUT) for the K4r).

**● EFFECT TYPE (K4 only)**

(Value: 1 to 16)

Set which of the 16 built-in DIGITAL EFFECTs is to be used.



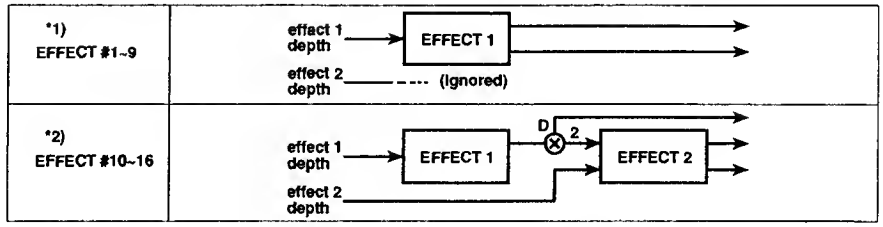

**<Procedure>**

(1) Press the (EFFECT) several times to display the EFFECT TYPE Setting screen.

(2) Make the setting using the VALUE Slider or the (+YES) and (-NO).

**● Parameters 1 to 3** (See P. 92')

| EFFECT No. | EFFECT NAME | PARAMETER 1 | VALUE | PARAMETER 2 | VALUE | PARAMETER 3 | VALUE |
|---|---|---|---|---|---|---|---|
| 1. | REVERB 1 | PRE.DELAY | 0~7 | REV.TIME | 0~7 | TONE | 0~30 |
| 2. | REVERB 2 | PRE.DELAY | | REV.TIME | | TONE | |
| 3. | REVERB 3 | PRE.DELAY | | REV.TIME | | TONE | |
| 4. | REVERB 4 | PRE.DELAY | | REV.TIME | | TONE | |
| 5. | GATE REVERB | PRE.DELAY | | GATE TIME | | TONE | |
| 6. | REVERSE GATE | PRE.DELAY | | GATE TIME | | TONE | |
| 7. | Normal DELAY | FEED BACK | | TONE | | DELAY | |
| 8. | Stereo PANPOT DELAY | FEED BACK | | L/R DELAY | | DELAY | |
| 9. | CHORUS | WIDTH | | FEED BACK | | RATE | |
| 10. | OVER DRIVE+ FLANGER | DRIVE | | FL.TYPE | | 1→2 BAL | |
| 11. | OVER DRIVE+ Normal DELAY | DRIVE | | DELAY TIME | | 1→2 BAL | |
| 12. | OVER DRIVE+ REVERB | DRIVE | | REV.TYPE | | 1→2 BAL | |
| 13. | Normal DELAY+ Normal DELAY | DELAY1 | | DELAY2 | | 1→2 BAL | |
| 14. | Normal DELAY+ Stereo Pan.DELAY | DELAY1 | | DELAY2 | | 1→2 BAL | |
| 15. | CHORUS+ Normal DELAY | CHORUS | | DELAY | | 1→2 BAL | |
| 16. | CHORUS+ Streo Pan.DELAY | CHORUS | | DELAY | | 1→2 BAL | |




*"1→2 BAL" in PARAMETER 3 controls the balance between the sound passing through only Effect 1 and the sound passing through both Effect 1 and 2.

**<Procedure>**

(1) Press the (EFFECT) several times to display the EFFECT Parameter Setting screen.

(2) Make the Setting using the VALUE Slider or the (+YES) and (-NO).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● **SUBMIX CH EDIT**

(Value: A through H)

Select the SUBMIX CH to be edited. (See P. 24, 71)

(OUTPUT)

```
EFFECT PACH  32
SUBMIX EDIT=  H
```

**<Procedure>**

(1) Press the (EFFECT) several times to display the SUBMIX CH Select screen (K4 only – use the (OUTPUT) on the K4r).

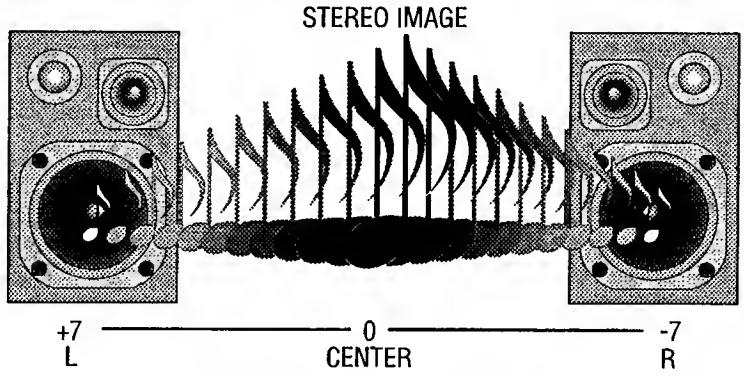
(2) Select with the VALUE Slider or the (+YES) and (-NO).

(3) Repeat steps (1) and (2) is you want to edit other SUBMIX CHes.

● **PAN**

(Value: –7 (Right) to 0 (Center) to +7 (Left), INDIV 1 to INDIV 6 [K4r])

***Note:*** *Determine the sound image orientation of the tone using the SUBMIX CH. When you use the K4r's card on K4, the patches assigned INDIV1 through INDIV6 are output from center.*




(OUTPUT)

```
EFFECT PACH  H
PAN          = +7
```

**<Procedure>**

(1) Press the (EFFECT) several times to display the PAN Setting screen (K4 only – use the (OUTPUT) on the K4r).

(2) Make the setting with the VALUE Slider or the (+YES) and (-NO).

● **EFFECT SEND 1 and 2 (K4 only)**

(Value: 0 to 100)

Set the level of the Effect.

*Effect modes 1 through 9 are Single type Effects (only one type of Effect is applied).*

(OUTPUT)

```
EFFECT PACH  H
SEND 1       =100
```

**<Procedure>**

(1) Press the (EFFECT) several times to display the SEND Setting screen (K4 only – use the (OUTPUT) on the K4r).

(2) Make the Setting with the VALUE Slider or the (+YES) and (-NO).

(3) Set SEND 2 with EFFECT Type 10 through 16.





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# 4. Explanation of Effect Types

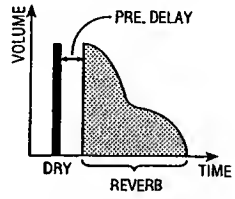
● **REVERB**

Reverb can simulate sound in a room, whether a bathroom, garage, concert hall, or the Taj Mahal. There are several parameters that affect reverb.

***Reverb Time*** is how long the reverb will sound. This approximates the size and "liveness" of the room.

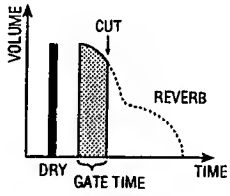
***Predelay*** is the time before any reverb effect starts. In an actual room this is related to the distance between the source and the nearest wall surface, which provides the *first reflection* of the sound and starts the sound reverberating throughout the room. Naturally in a large room the Predelay would be longer; in a small room, shorter.

***Tone*** relates to the construction of the room, whether tile (bright) or carpet (dull).



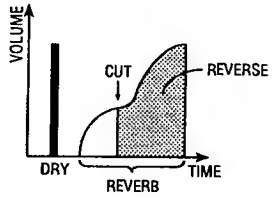

● **GATE REVERB**

Gated reverb is reverb processed through a gate. The gate cuts off the reverberation before it decays naturally, a popular effect in recordign studios. Good for drums.



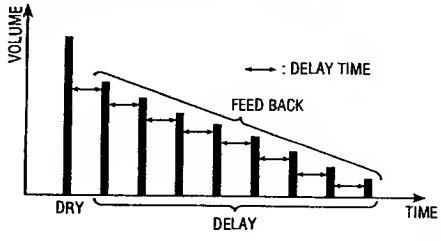

● **REVERSE GATE**

In this type, the original sound plays normally, but the reverb is sampled and then played in reverse. Great for drums especially snare.




● **NORMAL DELAY**

This effect produces a repeating delay, that decays gradually to zero. Delay Time adjsuts the time between repeats, Feedback adjusts the relative level between each successive repeat, tone adjusts the timbre of the delay. This is useful for many situations, for example bass guitar using a short delay time and a small amount of feedback, or a synth solo with long decay and no feedback.



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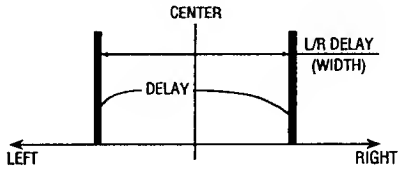
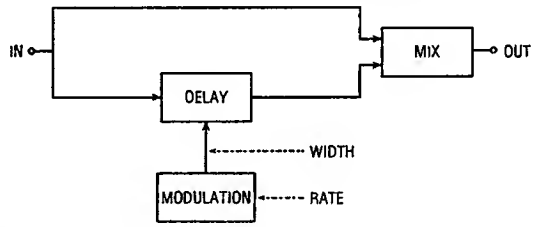
● **STEREO PAN DELAY**

This is the same as the normal delay except the repeats alternate from left and right outputs. Width controls the panning between center and extreme Left/Right.



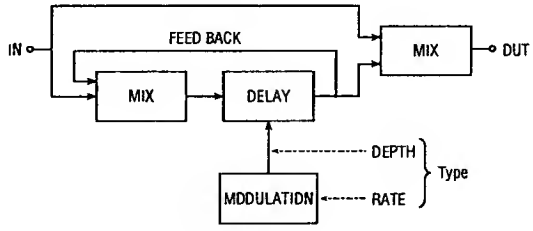

● **CHORUS**

Chorus creates slight variations in pitch and time, like a rotating organ speaker, resulting in enhanced dimensionality of sound. Chorus is created by delaying a sound by a very small amount (1 to 2 milliseconds) and mixing the delayed sound with itself. The traditional 'sweeping chorus" sound is caused by modulating the delay time with an LFO. In the K4, the chorus has controls for the speed of modulation (rate) and the amount of modualtion (width).



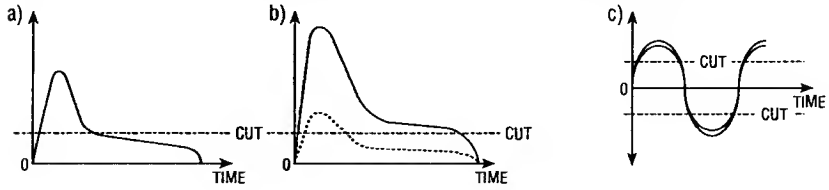

● **FLANGER**

Flanging is similar to chorusing, except a feedback control allows the delayed signal to be delayed again, similar to a repeating echo except the repeat times are so short that a deeper modulation effect is caused. Flanging is useful for guitar and other electric sounds.




● **OVER DRIVE**

Overdrive adds a clipping distortion to me sound, milder than a fuzz tone but more useful. Drive controls the amount of clipping. Try it with guitar or organ.




EFFECT EDIT OUTPUT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# 5. Writing EFFECT (K4) and OUTPUT (K4r) Settings

**<Procedure>**

***Note:*** *Make sure that the PROTECT is OFF, and perform the following procedure.*

(OUTPUT)

```
EFFECT WRITE
TO              =I  1
```

(1) Press the (WRITE) to display the following screen.

(2) Select INT (internal) or EXT (card) with the VALUE Slider or (+YES) and (-NO), and then press the (WRITE).

(3) Select the number of the EFFECT to be written with the VALUE Slider or the (+YES) and (-NO), and then press the (WRITE).

(OUTPUT)

```
EFFECT WRITE
      EXEC?=Y/N
```

(4) The message "EXEC?" will then appear. Press (+YES) to execute writing or (-NO) to cancel.

```
EFFECT WRITE
      SURE?=Y/N
```

(5) If you pressed (+YES) in step (4), the message "SURE?" will appear to ask you for confirmation. Press (+YES) to execute writing or (-NO) to cancel.

***Notes:*** *If necessary, set the PROTECT to OFF.*
*A new card must be formatted before it can be written to.* *(See P. 26)*

(+YES)

```
      COMPLETED!
```

(-NO)

```
      CANCELED!
```


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# 2-9. SYSTEM Programming

This sets the values that affect the entire K4/K4r unit. These values can be divided broadly into the following three groups.
- SYS (SYSTEM)
- TRS (MIDI Transmit)
- RCV (MIDI Receive)

## ■ SYS (SYSTEM) Group

- TUNE
- TRANSPOSE
- LOCAL CONTROL
- VELOCITY SWITCH POINT

**● TUNE**
(Value: –50 to 0 to +50)
See P. 14.

**● TRANSPOSE**
(Value: –12 to 0 to +12)
See P. 14.

**● LOCAL CONTROL (K4 only)**
(Value: ON or OFF)

LOCAL CONTROL is a function for disconnecting the K4 keyboard from the internal tone generator. (For details, see "The Fundamentals of MIDI" on P. 18.)

ON: The keyboard is connected to the tone generator.
OFF: The keyboard is separated from the tone generator.

> ***Note:*** *This is handy when using the K4 as a MULTI tone generator for a MIDI sequencer or computer. If you don't hear any sound on the K4 when playing the keyboard, make sure local control is on.*

**● VELOCITY SWITCH POINT (VEL SW POINT)**
(Value: 1 to 128)

The Velocity Switch Point at which switching between SOFT and LOUD takes place is set using the MULTI PLAY and Velocity Switches. (See P. 63, 87)




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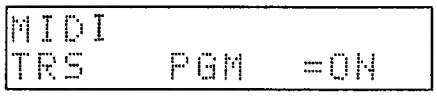
## ■ TRS (TRANSMIT) Group

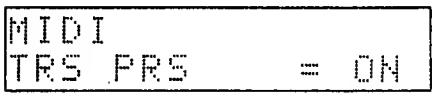
These are the settings for MIDI Transmission.

- TRANSMIT CHANNEL
- PROGRAM CHANGE
- PRESSURE
- BENDER
- MODULATION
- HOLD
- VELOCITY

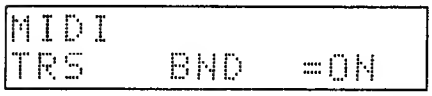
**● TRANSMIT CHANNEL (TRS CH)**
(Value: 1 to 16)
Sets the channel for MIDI Transmission.



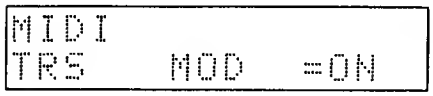

**● PROGRAM CHANGE (TRS PGM)**
(Value: ON or OFF)
Selects whether a Program Change is to be transmitted.



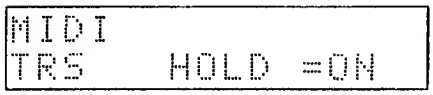

**● PRESSURE (TRS PRS) (K4 only)**
(Value: ON or OFF)
Selects whether Pressure data is to be transmitted.




**● BENDER (TRS BND) (K4 only)**
(Value: ON or OFF)
Selects whether Bender data is to be transmitted.




**● MODULATION (TRS MOD) (K4 only)**
(Value: ON or OFF)
Selects whether Modulation data is to be transmitted.




**● HOLD (TRS HOLD) (K4 only)**
(Value: ON or OFF)
Selects whether Hold pedal data is to be transmitted.

**● VELOCITY (TRS VEL) (K4 only)**
(Value: ON or OFF)
Selects whether Velocity data is to be transmitted.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## ■ RCV (RECEIVE) Group

These are the settings for MIDI Reception.

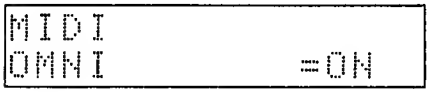
- RECEIVE CHANNEL
- OMNI ON/OFF
- PROGRAM CHANGE
- PRESSURE
- BENDER
- MODULATION
- VOLUME
- HOLD
- VELOCITY
- EXCLUSIVE

**<Procedure>**

(1) Press the (SYSTEM) to display the SYSTEM COMMAND Select screen.
(2) Select "RCV" with the (+YES) and (-NO).

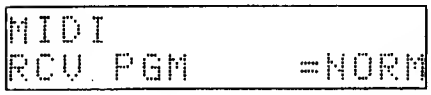
**● RECEIVE CHANNEL (RCV CH)**

(Value: 1 to 16)
Sets the channel for MIDI Reception.




**● OMNI**

(Value: ON or OFF)
Selects OMNI ON or OFF. If OMNI is On, data on any channel will be received and played when in SINGLE mode.




**● PROGRAM CHANGE (RCV PGM) (See P. 88)**

(Value: OFF, NORM, SECT or LINK)
Selects whether a Program Change is to be recognized.

**OFF**: All data will be ignored.
**NORM**: Switches between SINGLE Patches (0 to 63) and MULTI Patches (64 to 127).
**SECT**: Switches between SINGLE Patches in the eight MULTI Patch Sections which have matching MIDI channels.
**LINK**: Switches the K4/K4r to the next patch in the LINK series.

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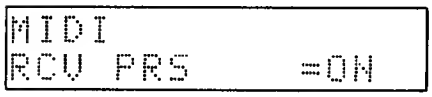
| SINGLE | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | B | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| | C | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 |
| | D | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |

| MULTI | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
| | B | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |
| | C | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 |
| | D | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 |

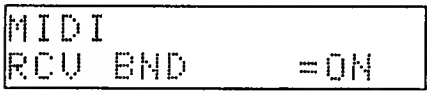
***Notes:*** *These program change numbers are used for both internal and external memory.*

*If you want to change from internal to external patch banks (or vice versa), you should send an EXCLUSIVE Message for K4/K4r before sending program change number. The data format of MIDI EXCLUSIVE Message is as* *See P. 88*

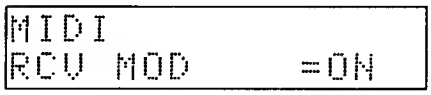
*This SYSTEM EXCLUSIVE Message is also transmitted when the "SINGLE: INT/EXT" or "MULTI: INT/EXIT" switches.*



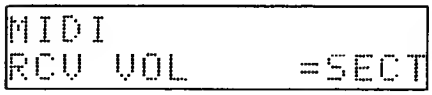

● **PRESSURE (RCV PRS)**
(Value: ON or OFF)
Selects whether Aftertouch data is to be recognized.



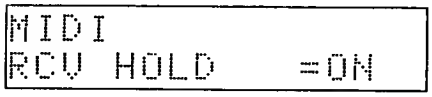

● **BENDER (RCV BND)**
(Value: ON or OFF)
Selects whether Bender data is to be recognized.



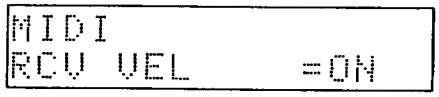

● **MODULATION (RCV MOD)**
(Value: ON or OFF)
Selects whether Modulation data is to be recognized.



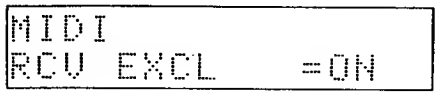

● **VOLUME (RCV VOL)**
(Value: OFF, NORM, SECT)
Selects whether Volume data is to be recognized.




● **HOLD (RCV MOD)**
(Value: ON or OFF)
Selects whether Hold data is to be recognized.




● **VELOCITY (RCV VEL)**
(Value: ON or OFF)
Selects whether Velocity data is to be recognized.




● **EXCLUSIVE (RCV EXCL)**
(Value: ON or OFF)
Selects whether SYSTEM EXCLUSIVE data is to be recognized.



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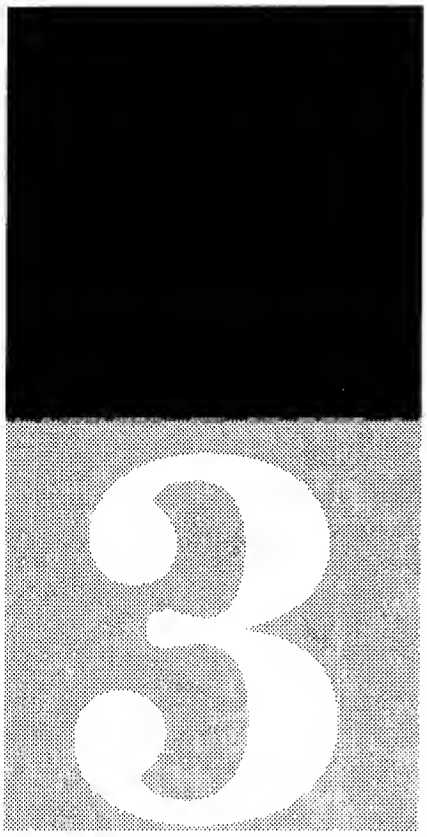

# Chapter 3. Advanced Applications

This chapter explains advanced techniques and information for the player and composer when using the K4/K4r and MIDI.

## 3-1. MIDI DATA DUMP

## 3-2. Play Using a Sequencer or Computer

## 3-3. MULTI Real Time Play

## 3-4. MIDI for the Advanced User

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# 3-1. MIDI DATA DUMP

The K4/K4r can execute MIDI Data Dumps of individual patches, blocks of patches, or the entire patch memory.

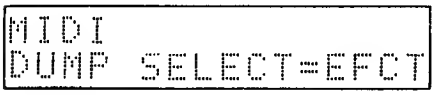
*Data control is easy when a sequencer with a MIDI Data Dump function such as the Q-80 is used. With the Q-80, data equivalent to about 40 times the storage capacity of the K4/K4r can be saved on a 2DD disk.*

| Parameter | TONE | *SGL | *MLT | EFCT | *EFF | DRUM | ALL |
|---|---|---|---|---|---|---|---|
| Dump Data | | | | (OUT) | (*OUT) | (*OUT) | |
| SINGLE | 1Patch | 64Patch | | | | | |
| MULTI | 1 Patch | | 64Patch | | | | ALL |
| DRUM | | | | | | 1KIT | |
| EFFECT | | | | 1Patch | 32Patch | | |
| Comment | *1 | *2 | *2 | *1 | *2 | *2 | *2 |

*1 Selected Patch
*2 INT (Internal) or EXT (Card)

*Before performing the MIDI Data Dump, select the patches set for the EFFECT (OUTPUT) Settings or Patches and Blocks which you wish to transmit.*

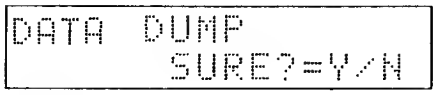
Example: Transmit EFFECT setting #17



**<Procedure>**

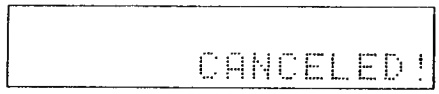
(1) Choose SINGLE or MULTI PLAY, press (EDIT), and select the following screen.
(2) Select "17" with the VALUE Slider or (+YES) and (-NO).
(3) Press (EDIT) several times to display the MIDI Data Dump Select screen. Select "EFFC" with the VALUE Slider or (+YES) and (-NO).
(4) Press (EDIT) once to display the MIDI Data Dump Select screen.

***Note:*** *If necessary, ready the connected instrument for receiving the MIDI Data Dump.*

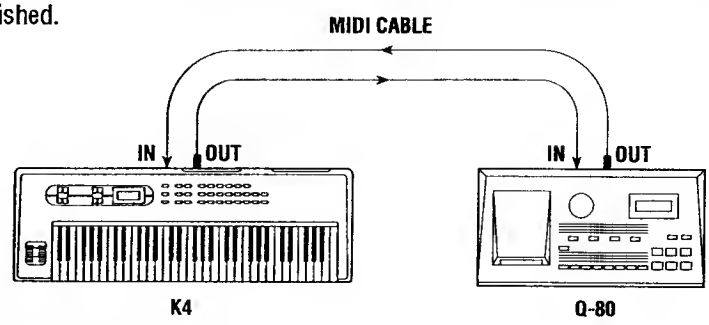



(+YES)

(-NO)




(5) After you press (+YES), you will be asked if you are sure – press (+YES) again to confirm. The message "COMPLETED!" will be displayed when the dump has finished.




*Refer to the "DATA DUMP" command for the Q-80 Owner's Manual for the Q-80.*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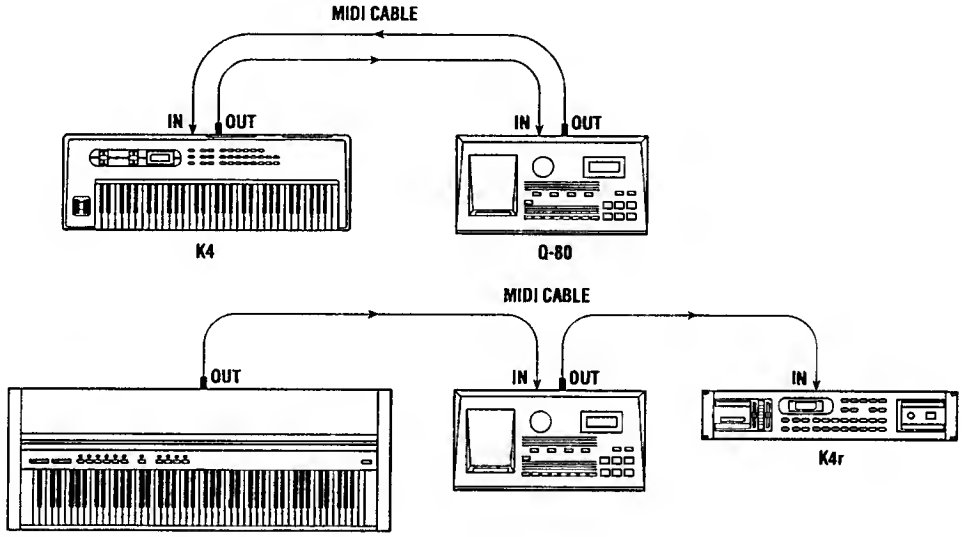
# 3-2. Play Using a Sequencer or Computer

With the MULTI mode, the K4/K4r can function as a synthesizer and drum sound source with up to eight parts. This means that an extremely simple setup such as the K4 (or K4r) and a Q-80 or other MIDI sequencer (or computer) can produce an extensive range of sounds.
Let's use the procedure shown below to actually connect a MIDI sequencer for performance.

### ● MIDI Sequencer Connection

In this example, a Kawai Q-80 is used as the sequencer. Connect it to the K4/K4r as shown in the illustration.




### ● Setting the SYSTEM LOCAL ON/OFF

Since the K4 itself can be used as a control keyboard or sound source, selecting a LOCAL ON/OFF Setting is necessary. The LOCAL Setting should be set to OFF (no sound output from the keyboard) when MULTI Performances on a sequencer or computer are being played with the K4. (Does not affect K4r.)

**<Procedure>**

Press (SYSTEM) several times until "SYSTEM LOCAL" is displayed. Turn off LOCAL using (+YES) and (-NO). (See P. 77)

* This separates the keyboard and sound generator of the K4 so that no sound will be output unless the MIDI Transmit and Receive Channels are matched (except when set at OMNI ON). (See P. 79)

*If you are using the Q-80 sequencer, set ECHO to THRU in order to output sound from the K4/K4r (see the Q-80 Owner's Manual). On other sequencers, this function has various names such as "Patch thru", "loop", etc.*

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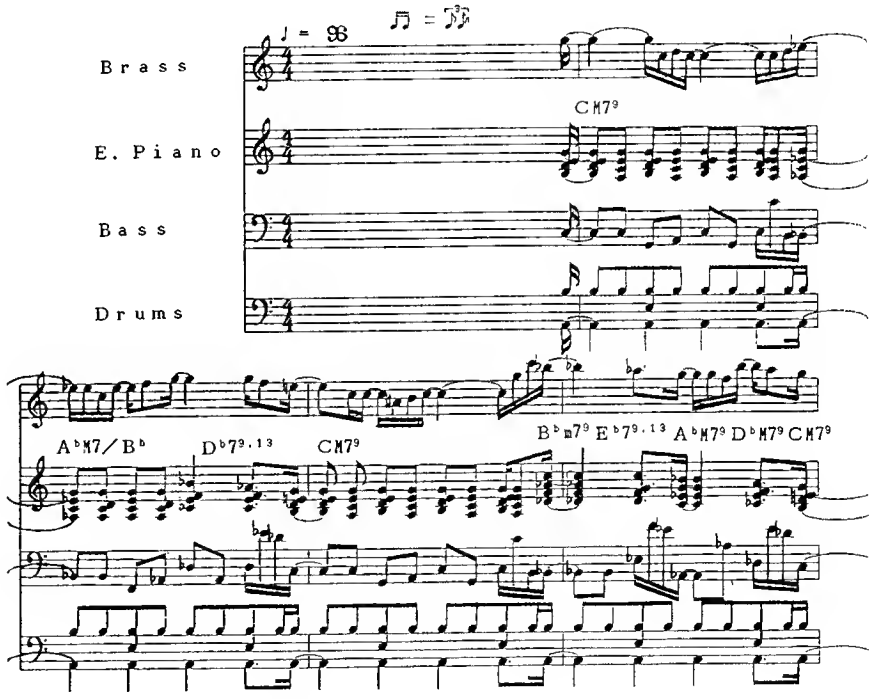
● **MULTI Settings**

Decide what Sections will be played, and what tones and MIDI Channels they will use. The settings for this are made in the same way as for MULTI real time play. Here we will use the MULTI ID-13 which is preset. The following table shows you what settings to make for this MULTI.

| Section number | Timbre | Receive MIDI channel |
|---|---|---|
| 1 | IB-6 Big Brass | 1 |
| 2 | IA-10 ChoperBass | 2 |
| 3 | IA-2 Bright EP | 3 |
| DRUM | | 10 |

Let's use this MULTI to play a demo song on the sequencer.

● **Demo Song Input**

Input the following demo song score into the sequencer. (Refer to the sequencer's manual for an explanation on how to input music.)

Listen to the song after you have input it. The song is only four bars long, so it might be best to repeat it.

What did you think? As you can see, quite a large range of performances can be obtained simply by connecting the K4/K4r to a sequencer or computer. Also, while the demo song used only four sections, the K4/K4r allows you to play using up nine different sections, including the DRUM Section. When doing this, you should be sure not to play more than 16 voices simultaneously including the DRUM Section.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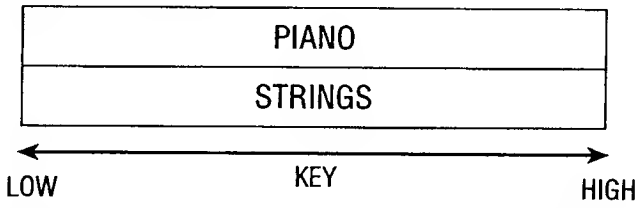
# 3-3. MULTI Real Time Play

MULTI allows you to create a variety of features using SINGLE Patch Settings. A number of examples of these settings are shown below – experiment with them to make yourself familiar with how they work.

● **LAYER (UNISON)**




For ID-1, as you can see in the illustration above, a PIANO Sound is layered over a STRINGS Sound when a single key is pressed.
UNISON Settings can be made using data like that shown below.

| MULTI NO.: ID-1 | VOL: 86 | EFFECT: Chorus (K4 only) | | | | NAME: LAYER 1 | | | |
|---|---|---|---|---|---|---|---|---|---|
| SW | PARAMETER | SEC1 | SEC2 | SEC3 | SEC4 | SEC5 | SEC6 | SEC7 | SEC8 |
| (A) | SINGLE | ID-2 | IA-3 | MUTE | MUTE | MUTE | MUTE | MUTE | MUTE |
| INST | ASSIGN | C Grand | Strings | | | | | | |
| (B) | ZONE LO | C-4 | C-4 | | | | | | |
| ZONE | ZONE HI | G6 | G6 | | | | | | |
| | VEL SW | ALL | ALL | | | | | | |
| (C) | RCV CH | 1 | 1 | | | | | | |
| SEC ch | (MODE) | KYBD | KYBD | | | | | | |
| (D) | LEVEL | 85 | 50 | | | | | | |
| LEVEL | TRANS | 0 | 0 | | | | | | |
| | TUNE | 0 | 0 | | | | | | |
| | SUBMIX CH | A | A | | | | | | |

* When playing a number of LAYER (UNISON) tones, set MODE for the K4 to KYBD, and RCV CH for the K4r to the same one.

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# 3-4. MIDI for the Advanced User

### ● Control Change Messages

| Control Change Number | Transmit | Receive | Remarks |
|---|---|---|---|
| 1 Modulation | O (K4r X) | O | 0 ~ 127 |
| 6 Value Slider | O | O | 0 ~ 127 |
| 7 Volume | X | O | 0 ~ 127 |
| 64 Hold | O (K4r X) | O | 0, 127 |
| 100, 101 RPC | O (0,1) | O (0,1) | |

### ● Program Change Messages

| SINGLE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| B | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| C | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 |
| D | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |

| MULTI | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
| B | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |
| C | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 |
| D | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 |

***Notes:*** *These program change numbers are used for both internal and external memory.*
*If you want to change from internal to external patch banks(or vice versa), you should send an EXCLUSIVE Message for K4/K4r before sending program change number.*
*The data format of MIDI EXCLUSIVE Message is as below:*

| F0 | 40 | 0030 | 04 | 00(INT) or 02(EXT) | 00 | F7 |
|---|---|---|---|---|---|---|

*This SYSTEM EXCLUSIVE is also transmitted when the* (SINGLE INT/EXT) *or* (MULTI INT/EXT).

### ● System Exclusive Messages

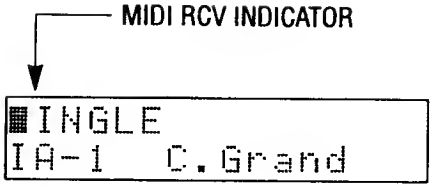
(1) EXCLUSIVE Data Format

| | | |
|---|---|---|
| Status | F0H | SYSTEM EXCLUSIVE Message |
| Kawai ID number | 40H | |
| Channel number | 0nH | n=0–F |
| Function number | | |
| Group number | 00H | Synthesizer Group |
| Model ID number | 04H | K4/K4r ID number |
| Subcommand 1 | | |
| Subcommand 2 | | |
| Data | | |
| Data | | |
| EOX | | EXCLUSIVE Data END |

(2) Dump Request

Depending on the type of Dump Request, the values in the following table are substituted for function number, subcommand 1, and subcommand 2 in the EXCLUSIVE Data Format shown in item 1) above.

| Dump request type | | | Function number | Subcommand 1 | Subcommand 2 |
|---|---|---|---|---|---|
| ONE DUMP | SINGLE1 | INT | 00H | 00H | 00H–3FH |
| | MULTI | | | | 40H–7FH |
| | EFFECT | | | 01H | 00H–3FH |
| | DRUM | | | | |
| | SINGLE | EXT | | 02H | 00H–3FH |
| | MULTI | | | | 40H–7FH |
| | EFFECT | | | 03H | 00H–1FH |
| | DRUM | | | | |
| ALL DUMP | INT | | 02H | 00H | 00H |
| | EXT | | | 02H | 00H |
| ALL SINGLE | INT | | 01H | 00H | 00H |
| | EXT | | | 02H | |
| ALL MULTI | INT | | | 00H | 40H |
| | EXT | | | 02H | |
| ALL EFFECT | INT | | 01H | 01H | 00H |
| | EXT | | | 03H | |
| ALL DRUM | INT | | 00H | 01H | 20H |
| | EXT | | | 03H | |




***Notes: MIDI RCV INDICATOR***

*Every time the K4/K4r receives MIDI data, the sign appears at the upper left corner.*

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# APPENDICES

# A-1. Error Messages

An error message will be displayed if an operation is incorrect or contains some error. If an error message appears, check this section and take action as explained to correct the problem.

Messages Appearing During WRITE or SAVE/LOAD Operations

| Message | Cause | Response |
|---|---|---|
| PROTECTED! | The WRITE PROTECT parameter for the destination (internal memory or card) is ON. | Turn off WRITE PROTECT for the internal memory or card. (See P. 27) |
| NO CARD! | A LINK, WRITE, SAVE, or LOAD operation was attempted with the card not inserted. | Insert the card correctly. |
| ID ERROR! | An attempt was made to select a Patch using a card not formatted for the K4/K4r. | Use a correct card, or reformat it. (See P. 26) |
| CAN'T WRITE! | An attempt was made to SAVE data to a ROM card. | Use a RAM card. |

Messages Appearing When the Batteries Need Replacing

| Message | Cause | Response |
|---|---|---|
| CHECK!<br>INTERNAL BATTERY | The backup battery for the K4/K4r is almost dead. | Contact your Kawai Service Center. |


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# A-2. Troubleshooting

Since the K4/K4r is equipped with a wide variety of functions, depending on the settings, it may not operate as expected. Also, sound may not be output due to connected amplifiers or other equipment. This chart explains troubleshooting for these types of problems.

| Problem | Possible cause | Page to see |
|---|---|---|
| No sound | Is the VOLUME too low?<br>Adjust the VOLUME on the K4/K4r or any connected amplifiers or other equipment. | P. 5 |
| | Can sound be heard through headphones when connected?<br>If sound is heard, the problem cause may be with connected equipment or cords. Check connections | P. 5, 10 |
| | (When in the SINGLE or MULTI PLAY mode) Is the Section volume or VOLUME level too low? | P. 33, 61, 64 |
| | (When in the MULTI PLAY mode) Is the Section PLAY mode set for MIDI? | P .67, 63, 79 |
| | Is the MIDI function LOCAL CONTROL turned off? | P. 77 |
| | Is the volume level for the K4/K4r too low because of MIDI volume data from external MIDI equipment? Turn the power off, and then on again. | P. 80 |
| | After lowering the volume on the amplifier or other connected equipment, turn the power off and then on again. | P. 10 |
| Sound is distorted | Is the connection to the amplifier's IN jack secure? | P. 10 |
| DRUM Section does not play | Is the volume level for the DRUM Section too low? | P. 67 |
| | Is the MIDI channel for the DRUM Section set correctly? | P. 67 |
| Pitch is out of tune | Are TRANSPOSE and TUNE set correctly? | P. 14, 64 |
| | Is the master turning setting incorrect?<br>If the pitch of a particular patch is out of tune, check the parameter setting for that patch. | P. 46, 68 |
| The pitch of a pressed key is not played | Are the COARSE and FINE Settings for the Sources correct? | P. 46 |
| No chord produced | Is the SOLO mode set? | P. 35 |
| MIDI data cannot be transmitted or received correctly. | Are the MIDI functions for the transmitting and receiving equipment set correctly? | P. 63, 67, 79 |




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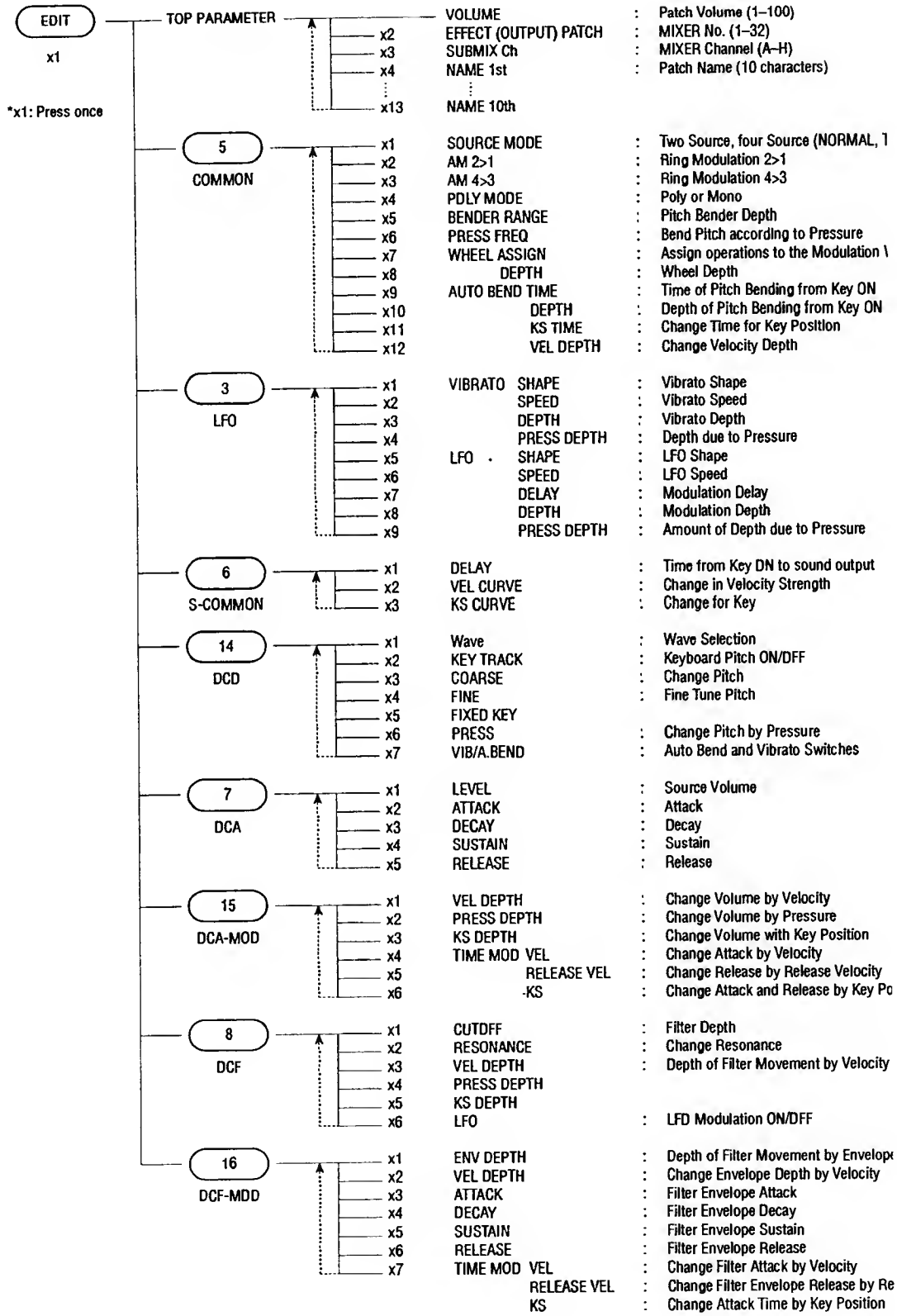
# A-3. Parameter Reference Chart

The technical parameters for a SINGLE Patch are shown below.

SINGLE EDIT



# A-5. Blank Chart

**K4 PARAMETER LIST** **PATCH**

| | | | | | | |
|---|---|---|---|---|---|---|
| SINGLE EDIT | VOLUME | | | | | |
| | EFFECT PATCH (OUTPUT PATCH) | | | | | |
| | SUBMIX CH | | | | | |
| | NAME | | | | | |
| | COMMON | SOURCE MODE | | | | |
| | | AM | | | | |
| | | POLY MODE | | | | |
| | | BENDER RANGE | | | | |
| | | PRESS FREQ | | | | |
| | | WHEEL ASSIGN | | | | |
| | | DEPTH | | | | |
| | | AUTO BEND TIME | | | | |
| | | DEPTH | | | | |
| | | KS TIME | | | | |
| | | VEL DEPTH | | | | |
| | LFO | VIBRATO SHAPE | | | | |
| | | SPEED | | | | |
| | | DEPTH | | | | |
| | | PRESS DEPTH | | | | |
| | | DCF-LFO SHAPE | | | | |
| | | SPEED | | | | |
| | | DELAY | | | | |
| | | DEPTH | | | | |
| | | PRESS DEPTH | | | | |
| | | | S1 | S2 | S3 | |
| | S-COMMON | DELAY | | | | |
| | | VEL CURVE | | | | |
| | | KS CURVE | | | | |
| | DCO | WAVE | | | | |
| | | KEY TRACK | | | | |
| | | COARSE | | | | |
| | | FINE (FIXED KEY) | | | | |
| | | PRESS FREQ | | | | |
| | | VIB/A.BEND | | | | |
| | DCA | LEVEL | | | | |
| | | ATTACK | | | | |
| | | DECAY | | | | |
| | | SUSTAIN | | | | |
| | | RELEASE | | | | |
| | DCA MOD | VEL DEPTH | | | | |
| | | PRESS DEPTH | | | | |
| | | KS DEPTH | | | | |
| | | TIME MOD ATTACK | | | | |
| | | RELEASE | | | | |
| | | KS | | | | |
| | DCF | CUT OFF | | | | |
| | | RESONANCE | | | | |
| | | VEL DEPTH | | | | |
| | | KS DEPTH | | | | |
| | | LFO | | | | |
| | DCF MOD | ENV DEPTH | | | | |
| | | VEL DEPTH | | | | |
| | | ATTACK | | | | |
| | | DECAY | | | | |
| | | SUSTAIN | | | | |
| | | RELEASE | | | | |
| | | TIME MOD ATTACK | | | | |
| | | RELEASE | | | | |
| | | KS | | | | |

**PATCH**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MULTI EDIT | VOLUME | | | | | | | | |
| | EFFECT PATCH (OUTPUT PATCH) | | | | | | | | |
| | NAME | | | | | | | | |
| | SECTION | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | INST | SINGLE NO. | | | | | | | |
| | | SINGLE NAME | | | | | | | |
| | ZONE | ZONE LO | | | | | | | |
| | | HI | | | | | | | |
| | | VEL SW | | | | | | | |
| | SEC CH | RCV CH | | | | | | | |
| | | MODE | | | | | | | |
| | OUTPUT | LEVEL | | | | | | | |
| | | TRANS | | | | | | | |
| | | TUNE | | | | | | | |
| | | SUBMIX CH | | | | | | | |

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# A-4. DRUM SECTION and EFFECT Factory Settings

| CARD NAME | | | VOLUME | | | | RCV CH | | 10 | | VELO DEPTH | | +38 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INST | KEY NAME | NOTE NO. | WAVE S1 | WAVE S2 | DECAY S1 | DECAY S2 | TUNE S1 | TUNE S2 | LEVEL S1 | LEVEL S2 | SUBMIX CH | | |
| BD 1 | C 1 | 36 | 97 | 97 | 31 | 31 | -3 | -3 | 95 | 95 | H | | |
| RIMSHOT 1 | C#1 | 37 | 103 | 103 | 45 | 45 | +1 | +1 | 90 | 90 | B | | |
| SD 1 | D 1 | 38 | 101 | 101 | 39 | 37 | +3 | +3 | 98 | 98 | B | | |
| Claps 1 | D#1 | 39 | 118 | 118 | 37 | 33 | +5 | +5 | 90 | 90 | A | | |
| SD 2 | E 1 | 40 | 102 | 101 | 45 | 41 | -9 | +5 | 95 | 91 | B | | |
| LO E.TOM | F 1 | 41 | 106 | 105 | 50 | 38 | -49 | -21 | 94 | 85 | F | | |
| HHCL 1 | F#1 | 42 | 107 | 107 | 57 | 57 | +12 | +12 | 85 | 42 | E | | |
| LO TOM 1 | G 1 | 43 | 104 | 100 | 93 | 41 | -23 | -17 | 90 | 61 | F | | |
| HHCL 2 | G#1 | 44 | 108 | 108 | 43 | 42 | +4 | +4 | 95 | 43 | E | | |
| MID E.TOM | A 1 | 45 | 106 | 102 | 50 | 38 | -18 | +20 | 94 | 46 | B | | |
| HHOP 1 | A#1 | 46 | 108 | 108 | 50 | 46 | 0 | 0 | 78 | 7 | E | | |
| MID TOM 1 | B 1 | 47 | 104 | 100 | 83 | 41 | -6 | -11 | 97 | 60 | B | | |
| HI E.TOM | C 2 | 48 | 106 | 102 | 50 | 38 | -5 | +20 | 95 | 46 | E | | |
| CLASH | C#2 | 49 | 112 | 112 | 60 | 25 | -2 | -2 | 92 | 9 | E | | |
| HI TOM 1 | D 2 | 50 | 105 | 104 | 43 | 43 | +8 | +8 | 95 | 56 | E | | |
| RIDE EDGE | D#2 | 51 | 115 | 115 | 55 | 55 | 0 | 0 | 80 | 65 | F | | |
| CLASH 2 | E 2 | 52 | 112 | 112 | 57 | 49 | -13 | 13 | 90 | 10 | G | | |
| RIDE CUP | F 2 | 53 | 117 | 117 | 59 | 49 | 0 | 0 | 92 | 5 | F | | |
| Tamb. | F#2 | 54 | 123 | 122 | 26 | 43 | 0 | 0 | 85 | 87 | A | | |
| Splash | G 2 | 55 | 112 | 112 | 55 | 43 | +18 | +18 | 83 | 73 | B | | |
| Cowbell | G#2 | 56 | 119 | 119 | 36 | 36 | -6 | -6 | 80 | 80 | B | | |
| MUTE CRASH | A 2 | 57 | 112 | 112 | 47 | 41 | -2 | -2 | 92 | 84 | E | | |
| SD 3 | A#2 | 58 | 99 | 99 | 38 | 35 | 0 | 0 | 98 | 98 | B | | |
| MUTE RIDE | B 2 | 59 | 116 | 116 | 45 | 45 | -1 | -1 | 92 | 92 | F | | |
| Hi Bongo | C 3 | 60 | 120 | 120 | 29 | 29 | +50 | +50 | 96 | 95 | E | | |
| Lo Bongo | C#3 | 61 | 120 | 120 | 29 | 29 | +31 | +31 | 96 | 95 | F | | |
| Hi Mute Conga | D 3 | 62 | 121 | 121 | 29 | 25 | +12 | +12 | 80 | 80 | E | | |
| Hi Conga | D#3 | 63 | 120 | 120 | 41 | 35 | +6 | +6 | 97 | 92 | E | | |
| Lo Conga | E 3 | 64 | 120 | 120 | 43 | 41 | -16 | -16 | 91 | 92 | F | | |
| Hi Timbale | F 3 | 65 | 125 | 125 | 42 | 38 | +2 | +2 | 80 | 85 | E | | |
| Lo Timbale | F#3 | 66 | 125 | 125 | 42 | 38 | -16 | -16 | 85 | 85 | F | | |
| Hi Agogo | G 3 | 67 | 119 | 119 | 30 | 30 | +50 | +50 | 88 | 88 | E | | |
| Lo agogo | G#3 | 68 | 119 | 119 | 30 | 30 | +22 | +22 | 88 | 91 | F | | |
| Shaker | A 3 | 69 | 126 | 127 | 32 | 34 | 0 | 0 | 84 | 43 | B | | |
| Maracas | A#3 | 70 | 127 | 127 | 32 | 34 | +6 | +6 | 86 | 78 | A | | |
| Cha 1 | B 3 | 71 | 139 | 139 | 38 | 38 | -13 | -13 | 68 | 75 | B | | |
| Cha 2 | C 4 | 72 | 139 | 139 | 38 | 38 | -13 | -13 | 68 | 75 | B | | |
| Slot Bell | C#4 | 73 | 130 | 130 | 43 | 41 | +2 | +2 | 91 | 93 | A | | |
| Click | D 4 | 74 | 133 | 133 | 33 | 33 | -3 | -3 | 92 | 93 | A | | |
| Claves | D#4 | 75 | 124 | 124 | 53 | 53 | 0 | 0 | 96 | 96 | A | | |
| BRUSH 1 | E 4 | 76 | 237 | 192 | 43 | 49 | +6 | -11 | 57 | 37 | B | | |
| BRUSH 2 | F 4 | 77 | 192 | 192 | 51 | 49 | -18 | -18 | 43 | 0 | B | | |
| Pola | F#4 | 78 | 134 | 134 | 44 | 41 | +3 | +3 | 95 | 99 | A | | |
| Timpany | G 4 | 79 | 129 | 129 | 51 | 51 | -23 | 23 | 95 | 88 | F | | |
| Timpany | G#4 | 80 | 129 | 129 | 49 | 49 | -10 | 16 | 95 | 88 | E | | |
| Timpany | A 4 | 81 | 129 | 129 | 48 | 48 | 0 | 0 | 95 | 88 | F | | |
| Timpany | A#4 | 82 | 129 | 129 | 47 | 47 | +12 | +12 | 95 | 88 | E | | |
| BD 2 | B 4 | 83 | 97 | 127 | 47 | 37 | -4 | -50 | 95 | 96 | H | | |
| BD 3 | C 5 | 84 | 125 | 98 | 22 | 45 | -28 | -11 | 82 | 100 | H | | |
| BD 4 | C#5 | 85 | 1 | 1 | 38 | 0 | -50 | +3 | 95 | 0 | H | | |
| SD 4 | D 5 | 86 | 192 | 1 | 40 | 36 | +28 | -6 | 61 | 64 | H | | |
| SD 5 | D#5 | 87 | 100 | 100 | 30 | 37 | 0 | 0 | 100 | 100 | B | | |
| SD 6 | E 5 | 88 | 101 | 101 | 50 | 52 | -25 | -9 | 91 | 91 | B | | |
| BD 5 | F 5 | 89 | 97 | 104 | 33 | 42 | +8 | -50 | 92 | 58 | H | | |
| HHCL 3 | F#5 | 90 | 107 | 192 | 14 | 29 | -1 | +50 | 65 | 53 | E | | |
| Claps 2 | G 5 | 91 | 118 | 116 | 33 | 47 | +5 | -50 | 94 | 96 | B | | |
| HH FOOT | G#5 | 92 | 110 | 110 | 54 | 49 | +3 | +3 | 43 | 44 | E | | |
| SD 7 | A 5 | 93 | 102 | 102 | 37 | 37 | +3 | +3 | 95 | 91 | B | | |
| Wd Drop | A#5 | 94 | 138 | 138 | 45 | 45 | +2 | +2 | 94 | 87 | A | | |
| Door Knock | B 5 | 95 | 137 | 137 | 34 | 35 | -1 | -1 | 94 | 95 | B | | |
| Metal Hit | C 6 | 96 | 132 | 132 | 44 | 27 | -7 | 7 | 94 | 91 | A | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | TYPE1 | REVERB 1 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 4 | PAN | 0 | 0 | +7 | -7 | +4 | -4 | -7 | 0 |
| | PART 2 | 2 | SEND1 | 10 | 45 | 45 | 45 | 45 | 45 | 100 | 0 |
| | PART M | 31 | SEND2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | TYPE1 | REVERB 1 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 5 | PAN | 0 | 0 | +7 | -7 | +4 | -4 | -7 | 0 |
| | PART 2 | 3 | SEND1 | 10 | 45 | 45 | 45 | 45 | 45 | 100 | 0 |
| | PART M | 17 | SEND2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | TYPE2 | REVERB 2 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 6 | PAN | 0 | 0 | +7 | -7 | +4 | -4 | -7 | 0 |
| | PART 2 | 3 | SEND1 | 10 | 30 | 30 | 30 | 30 | 30 | 100 | 0 |
| | PART M | 10 | SEND2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | TYPE2 | REVERB 2 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 6 | PAN | 0 | 0 | +7 | -7 | +4 | -4 | -7 | 0 |
| | PART 2 | 3 | SEND1 | 24 | 45 | 45 | 45 | 45 | 45 | 100 | 0 |
| | PART M | 20 | SEND2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | TYPE3 | REVERB 3 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 3 | PAN | 0 | 0 | +7 | -7 | +4 | -4 | -7 | 0 |
| | PART 2 | 3 | SEND1 | 10 | 20 | 20 | 20 | 20 | 20 | 100 | 0 |
| | PART M | 15 | SEND2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | TYPE3 | REVERB 3 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 0 | PAN | 0 | 0 | +7 | -7 | +4 | -4 | -7 | 0 |
| | PART 2 | 2 | SEND1 | 10 | 20 | 20 | 20 | 20 | 20 | 100 | 0 |
| | PART M | 13 | SEND2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | TYPE4 | REVERB 4 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 2 | PAN | 0 | 0 | +7 | -7 | +4 | -4 | -7 | 0 |
| | PART 2 | 2 | SEND1 | 18 | 45 | 45 | 45 | 45 | 45 | 100 | 0 |
| | PART M | 4 | SEND2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | TYPE4 | REVERB 4 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 6 | PAN | 0 | 0 | +7 | -7 | +4 | -4 | -7 | 0 |
| | PART 2 | 3 | SEND1 | 28 | 45 | 45 | 45 | 45 | 45 | 100 | 0 |
| | PART M | 24 | SEND2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | TYPE1 | REVERB 1 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 0 | PAN | +7 | +5 | +2 | 0 | -2 | -5 | -7 | 0 |
| | PART 2 | 3 | SEND1 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 |
| | PART M | 27 | SEND2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | TYPE5 | GATE REVERB | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 1 | PAN | 0 | 0 | +7 | -7 | +4 | -4 | -7 | 0 |
| | PART 2 | 7 | SEND1 | 18 | 66 | 45 | 45 | 45 | 45 | 100 | 0 |
| | PART M | 24 | SEND2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | TYPE6 | REVERSE GATE | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 2 | PAN | 0 | 0 | +7 | -7 | +4 | -4 | -7 | 0 |
| | PART 2 | 5 | SEND1 | 18 | 45 | 45 | 45 | 45 | 45 | 100 | 0 |
| | PART M | 31 | SEND2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | TYPE12 | OVER DRIVE + REV. | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 7 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 3 | SEND1 | 12 | 48 | 97 | 12 | 48 | 97 | 97 | 0 |
| | PART M | 16 | SEND2 | 0 | 0 | 0 | 60 | 60 | 60 | 97 | 0 |
| 13 | TYPE1 | REVERB 1 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 5 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 6 | SEND1 | 8 | 12 | 30 | 50 | 72 | 84 | 97 | 0 |
| | PART M | 28 | SEND2 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |
| 14 | TYPE2 | REVERB 2 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 6 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 7 | SEND1 | 8 | 12 | 30 | 50 | 72 | 84 | 97 | 0 |
| | PART M | 29 | SEND2 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |
| 15 | TYPE3 | REVERB 3 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 6 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 5 | SEND1 | 8 | 12 | 30 | 50 | 72 | 84 | 97 | 0 |
| | PART M | 29 | SEND2 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |
| 16 | TYPE4 | REVERB 4 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 6 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 3 | SEND1 | 8 | 12 | 30 | 50 | 72 | 84 | 97 | 0 |
| | PART M | 24 | SEND2 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | TYPE7 | Normal DELAY | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 3 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 5 | SEND1 | 12 | 30 | 48 | 64 | 72 | 84 | 97 | 0 |
| | PART M | 23 | SEND2 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |
| 18 | TYPE7 | Normal DELAY | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 0 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 7 | SEND1 | 12 | 30 | 48 | 64 | 72 | 84 | 97 | 0 |
| | PART M | 10 | SEND2 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |
| 19 | TYPE8 | ST. PAN DELAY | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 4 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 5 | SEND1 | 12 | 30 | 48 | 64 | 72 | 84 | 97 | 0 |
| | PART M | 19 | SEND2 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |
| 20 | TYPE8 | ST. PAN DELAY | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 3 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 6 | SEND1 | 12 | 30 | 48 | 64 | 72 | 84 | 97 | 0 |
| | PART M | 29 | SEND2 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |
| 21 | TYPE13 | Normal DELAY X 2 | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 3 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 3 | SEND1 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 0 |
| | PART M | 0 | SEND2 | 0 | 8 | 17 | 26 | 35 | 43 | 52 | 0 |
| 22 | TYPE16 | CHORUS + PAN DLY | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 4 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 4 | SEND1 | 97 | 97 | 97 | 40 | 40 | 40 | 97 | 0 |
| | PART M | 6 | SEND2 | 0 | 17 | 34 | 0 | 17 | 34 | 97 | 0 |
| 23 | TYPE14 | Normal & PAN DELAY | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 3 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 7 | SEND1 | 12 | 30 | 48 | 64 | 72 | 84 | 97 | 0 |
| | PART M | 18 | SEND2 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |
| 24 | TYPE14 | Normal & PAN DELAY | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 7 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 3 | SEND1 | 12 | 30 | 48 | 64 | 72 | 84 | 97 | 0 |
| | PART M | 31 | SEND2 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |
| 25 | TYPE9 | CHORUS | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 7 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 4 | SEND1 | 12 | 30 | 48 | 64 | 72 | 84 | 97 | 0 |
| | PART M | 28 | SEND2 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |
| 26 | TYPE9 | CHORUS | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 5 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 5 | SEND1 | 12 | 30 | 48 | 64 | 72 | 84 | 97 | 0 |
| | PART M | 30 | SEND2 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 |
| 27 | TYPE10 | OV. DRIVE + FLANG. | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 7 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 5 | SEND1 | 12 | 48 | 97 | 12 | 48 | 97 | 97 | 0 |
| | PART M | 24 | SEND2 | 0 | 0 | 0 | 60 | 60 | 60 | 97 | 0 |
| 28 | TYPE15 | CHORUS + N.DELAY | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 7 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 7 | SEND1 | 12 | 30 | 48 | 64 | 72 | 84 | 97 | 0 |
| | PART M | 14 | SEND2 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 0 |
| 29 | TYPE16 | CHORUS + PAN DLY. | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 7 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 3 | SEND1 | 97 | 97 | 97 | 40 | 40 | 40 | 97 | 0 |
| | PART M | 14 | SEND2 | 0 | 17 | 34 | 0 | 17 | 34 | 97 | 0 |
| 30 | TYPE11 | OV. DRIVE + N.DELAY | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 7 | PAN | 0 | 0 | 0 | 0 | +7 | 0 | -7 | 0 |
| | PART 2 | 7 | SEND1 | 54 | 97 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART M | 12 | SEND2 | 28 | 28 | 13 | 34 | 0 | 0 | 0 | 0 |
| 31 | TYPE16 | CHORUS + PAN DLY. | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 6 | PAN | 0 | 0 | 0 | 0 | +7 | 0 | -7 | 0 |
| | PART 2 | 7 | SEND1 | 54 | 97 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART M | 19 | SEND2 | 28 | 28 | 13 | 38 | 0 | 0 | 0 | 0 |
| 32 | TYPE1 | BYPASS | SUBMIX | A | B | C | D | E | F | G | H |
| | PART 1 | 1 | PAN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART 2 | 7 | SEND1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | PART M | 22 | SEND2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

* 1~11, 30, 31 for MULTI. 12~29 for SINGLE.
All H and Patch No.32 are BYPASS, K4r's PAN DATAs are same as K4.
(See P.72)



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| CARD NAME | | | VOLUME | | RCV CH | | VELO DEPTH | | |
|---|---|---|---|---|---|---|---|---|---|
| INST | KEY NAME | NOTE NO. | WAVE S1 | WAVE S2 | DECAY S1 | DECAY S2 | TUNE S1 | TUNE S2 | LEVEL S1 | LEVEL S2 | SUBMIX CH |
| | C 1 | 36 | | | | | | | | | |
| | C#1 | 37 | | | | | | | | | |
| | D 1 | 38 | | | | | | | | | |
| | D#1 | 39 | | | | | | | | | |
| | E 1 | 40 | | | | | | | | | |
| | F 1 | 41 | | | | | | | | | |
| | F#1 | 42 | | | | | | | | | |
| | G 1 | 43 | | | | | | | | | |
| | G#1 | 44 | | | | | | | | | |
| | A 1 | 45 | | | | | | | | | |
| | A#1 | 46 | | | | | | | | | |
| | B 1 | 47 | | | | | | | | | |
| | C 2 | 48 | | | | | | | | | |
| | C#2 | 49 | | | | | | | | | |
| | D 2 | 50 | | | | | | | | | |
| | D#2 | 51 | | | | | | | | | |
| | E 2 | 52 | | | | | | | | | |
| | F 2 | 53 | | | | | | | | | |
| | F#2 | 54 | | | | | | | | | |
| | G 2 | 55 | | | | | | | | | |
| | G#2 | 56 | | | | | | | | | |
| | A 2 | 57 | | | | | | | | | |
| | A#2 | 58 | | | | | | | | | |
| | B 2 | 59 | | | | | | | | | |
| | C 3 | 60 | | | | | | | | | |
| | C#3 | 61 | | | | | | | | | |
| | D 3 | 62 | | | | | | | | | |
| | D#3 | 63 | | | | | | | | | |
| | E 3 | 64 | | | | | | | | | |
| | F 3 | 65 | | | | | | | | | |
| | F#3 | 66 | | | | | | | | | |
| | G 3 | 67 | | | | | | | | | |
| | G#3 | 68 | | | | | | | | | |
| | A 3 | 69 | | | | | | | | | |
| | A#3 | 70 | | | | | | | | | |
| | B 3 | 71 | | | | | | | | | |
| | C 4 | 72 | | | | | | | | | |
| | C#4 | 73 | | | | | | | | | |
| | D 4 | 74 | | | | | | | | | |
| | D#4 | 75 | | | | | | | | | |
| | E 4 | 76 | | | | | | | | | |
| | F 4 | 77 | | | | | | | | | |
| | F#4 | 78 | | | | | | | | | |
| | G 4 | 79 | | | | | | | | | |
| | G#4 | 80 | | | | | | | | | |
| | A 4 | 81 | | | | | | | | | |
| | A#4 | 82 | | | | | | | | | |
| | B 4 | 83 | | | | | | | | | |
| | C 5 | 84 | | | | | | | | | |
| | C#5 | 85 | | | | | | | | | |
| | D 5 | 86 | | | | | | | | | |
| | D#5 | 87 | | | | | | | | | |
| | E 5 | 88 | | | | | | | | | |
| | F 5 | 89 | | | | | | | | | |
| | F#5 | 90 | | | | | | | | | |
| | G 5 | 91 | | | | | | | | | |
| | G#5 | 92 | | | | | | | | | |
| | A 5 | 93 | | | | | | | | | |
| | A#5 | 94 | | | | | | | | | |
| | B 5 | 95 | | | | | | | | | |
| | C 6 | 96 | | | | | | | | | |

OPTION DATA



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| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 2 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 3 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 4 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 5 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 6 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 7 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 8 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 9 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 10 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 11 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 12 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 13 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 14 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 15 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 16 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 18 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 19 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 20 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 21 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 22 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 23 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 24 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 25 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 26 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 27 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 28 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 29 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 30 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 31 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 32 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |

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Synthesizer
MODEL K4/K4r

# MIDI Implementation Chart

Date: Aug. 1989
Version: 1.0

| Function ... | | Transmitted | Recognized | Remarks |
|---|---|---|---|---|
| Basic Channel | Default | 1—16 | 1—16 | Memorized |
| | Changed | 1—16 | 1—16 | |
| Mode | Default | — | 1, 3 | Memorized |
| | Messages | X | OMNI ON/OFF | MONO ignored |
| | Altered | * * * | | |
| Note Number | : True Voice | 24—108 | 0—127 | |
| | | * * * | 0—127 | |
| Velocity | Note ON | * | * | |
| | Note OFF | * | * | |
| After Touch | Key's | X | X | |
| | Ch's | * | * | |
| Pitch Bender | | * | * | |
| Control Change | 1 | * | * | Modulation |
| | 7 | X | * | Volume |
| | 64 | * | * | Hold 1 |
| | 101, 101 | * (0, 1) | * (0, 1) | RPC |
| | 6 | * | * | Data entry |
| Prog Change | : True # | * | * | |
| | | *** | 0—127 | |
| System Exclusive | | * | * | |
| System Common | : Song Pos | X | X | |
| | : Song Sel | X | X | |
| | : Tune | X | X | |
| System Real Time | : Clock | X | X | |
| | : Commands | X | X | |
| Aux Messages | : Local ON/OFF | X | O | |
| | : All Notes OFF | O (123) | O (123~127) | |
| | : Active Sense | O | O | |
| | : Reset | X | X | |
| Notes | | * Can be set to O or X<br>Memorized even after turning off the power<br>RPC #0=Pitch Bender sensitivity<br>#1=Master fine tuning<br>Values are given by Data entry | | |

Mode 1 : OMNI ON, POLY
Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, POLY
Mode 4 : OMNI OFF, MONO

O : Y
X : N

OPTION DATA



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# K4/K4r Specifications

| | | |
|---|---|---|
| KEYBOARD (K4) | 61, WEIGHTED, w/Attack & Release Velocity and Aftertouch pressure<br>(K4r: 2U rack-mounted digital synthesizer module) | |
| SOUND SYSTEM | 16 Bit PCM & DC WAVES (TOTAL 256 WAVES) | |
| MAX POLYPHONY | NORMAL:16, TWIN&DOUBLE:8 (32 SOURCES) | |
| PROGRAM MEMORY | INTERNAL: 128 (64 SINGLE/64 MULTI) + 61 DRUM<br>DC-16 MEMORY CARD: 128 (64 SINGLE/64 MULTI) + 61 DRUM | |
| SINGLE EDIT | EDIT | VOLUME, EFFECT PATCH (OUTPUT PATCH), SUBMIX CH, NAME |
| | 5 COMMON | SOURCE MODE, AM, POLY MODE, BENDER RANGE, PRESS > FREQ, WHEEL ASSIGN, DEPTH, AUTO BEND TIME, DEPTH, KS > TIME, VEL > DEPTH |
| | 13 LFO | VIBRATO SHAPE, SPEED, DEPTH, PRESS DEPTH, DCF-LFO SHAPE, SPEED, DELAY, DEPTH, PRESS DEPTH |
| | 6 S-COMMON | DELAY, VEL CURVE, KS CURVE, COPY |
| | 14 DCO | WAVE, KEY TRACK, COARSE (FINE), FIXED KEY, PRESS on off, VIB/A.BEND on off |
| | 7 DCA | LEVEL, ATTACK, DECAY, SUSTAIN, RELEASE |
| | 15 DCA MOD | VEL DEPTH, PRESS DEPTH, KS DEPTH, TIME MOD-VEL, RELEASE VEL, KS |
| | 8 DCF | CUTOFF, RESONANCE, VEL DEPTH, PRESS DEPTH, KS DEPTH, LFO |
| | 16 DCF MOD | ENV DEPTH, VEL DEPTH, ATTACK, DECAY, SUSTAIN, RELEASE, TIME MOD-VEL, RELEASE VEL, KS |
| MULTI EDIT | EDIT | VOLUME, EFFECT PATCH (OUTPUT PATCH) NAME |
| | A INST | SINGLE ASSIGN |
| | B ZONE | ZONE LO, HI, VELOCITY SWITCH |
| | C SEC ch | RCV CH, (K4: MODE) |
| | D LEVEL | LEVEL, TRANS, TUNE, SUBMIX CH |
| DRUM EDIT | DRUM | DRUM: (COMMON) VOLUME, RCV CH, VEL DEPTH<br>(EACH KEY) KEY, WAVE S1, S2, DECAY S1, S2, TUNE S1, S2, LEVEL S1, S2, SUBMIX CH, COPY |
| EFFECT EDIT | EFFECT :K4<br>OUTPUT :K4r | TYPE, PARAMETER 1, 2, 3, SUBMIX CH EDIT, PAN, SEND 1, 2<br>SUBMIX CH EDIT, PAN/INDIV. |
| SYSTEM | SYSTEM | SYS: TUNE, TRANSPOSE, LOCAL, VEL SW POINT, LINK 1-8<br>TRS: CHANNEL, PGM, (K4: PRS, BEND, MOD, HOLD, VEL)<br>RCV: CHANNEL, OMNI, PGM, PRS, BEND, MOD, VOL, HOLD, VEL, EXCLUSIVE |
| WRITE/DUMP | WRITE DUMP | WRITE, DATA DUMP, INT PROTECT, CARD PROTECT SAVE/LOAD, CARD FORMAT |
| FRONT AND REAR PANEL CONTROLS & jacks | VOLUME, PATCH SELECT SW, DRUM SW, EFFECT SW (K4r: OUTPUT), (K4: WHEEL X 2)<br>WRITE SW, POWER SW, DC IN, OUTPUT STEREO L/R (MONO) (K4r: +1–6), PHONE jack, CARD SLOT, MIDI IN/OUT/THRU | |
| DISPLAY | 16 x 2 LCD backlit | |
| DIMENSIONS (mm) | K4: 1020 (W) x 310.8 (D) x 88.5 (H),<br>K4r: 483 (W) x 218.5 (D) x 88 (H) | |
| WEIGHT | K4: 7.3 kg, K4r: 2.8 kg | |
| POWER CONSUMPTION | K4: 5.8 W, K4r: 6.8 W | |



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| CARD NAME | | | VOLUME | | RCV CH | | VELO DEPTH | | |
|---|---|---|---|---|---|---|---|---|---|
| INST | KEY NAME | NOTE NO. | WAVE S1 | WAVE S2 | DECAY S1 | DECAY S2 | TUNE S1 | TUNE S2 | LEVEL S1 | LEVEL S2 | SUBMIX CH |
| | C 1 | 36 | | | | | | | | | |
| | C#1 | 37 | | | | | | | | | |
| | D 1 | 38 | | | | | | | | | |
| | D#1 | 39 | | | | | | | | | |
| | E 1 | 40 | | | | | | | | | |
| | F 1 | 41 | | | | | | | | | |
| | F#1 | 42 | | | | | | | | | |
| | G 1 | 43 | | | | | | | | | |
| | G#1 | 44 | | | | | | | | | |
| | A 1 | 45 | | | | | | | | | |
| | A#1 | 46 | | | | | | | | | |
| | B 1 | 47 | | | | | | | | | |
| | C 2 | 48 | | | | | | | | | |
| | C#2 | 49 | | | | | | | | | |
| | D 2 | 50 | | | | | | | | | |
| | D#2 | 51 | | | | | | | | | |
| | E 2 | 52 | | | | | | | | | |
| | F 2 | 53 | | | | | | | | | |
| | F#2 | 54 | | | | | | | | | |
| | G 2 | 55 | | | | | | | | | |
| | G#2 | 56 | | | | | | | | | |
| | A 2 | 57 | | | | | | | | | |
| | A#2 | 58 | | | | | | | | | |
| | B 2 | 59 | | | | | | | | | |
| | C 3 | 60 | | | | | | | | | |
| | C#3 | 61 | | | | | | | | | |
| | D 3 | 62 | | | | | | | | | |
| | D#3 | 63 | | | | | | | | | |
| | E 3 | 64 | | | | | | | | | |
| | F 3 | 65 | | | | | | | | | |
| | F#3 | 66 | | | | | | | | | |
| | G 3 | 67 | | | | | | | | | |
| | G#3 | 68 | | | | | | | | | |
| | A 3 | 69 | | | | | | | | | |
| | A#3 | 70 | | | | | | | | | |
| | B 3 | 71 | | | | | | | | | |
| | C 4 | 72 | | | | | | | | | |
| | C#4 | 73 | | | | | | | | | |
| | D 4 | 74 | | | | | | | | | |
| | D#4 | 75 | | | | | | | | | |
| | E 4 | 76 | | | | | | | | | |
| | F 4 | 77 | | | | | | | | | |
| | F#4 | 78 | | | | | | | | | |
| | G 4 | 79 | | | | | | | | | |
| | G#4 | 80 | | | | | | | | | |
| | A 4 | 81 | | | | | | | | | |
| | A#4 | 82 | | | | | | | | | |
| | B 4 | 83 | | | | | | | | | |
| | C 5 | 84 | | | | | | | | | |
| | C#5 | 85 | | | | | | | | | |
| | D 5 | 86 | | | | | | | | | |
| | D#5 | 87 | | | | | | | | | |
| | E 5 | 88 | | | | | | | | | |
| | F 5 | 89 | | | | | | | | | |
| | F#5 | 90 | | | | | | | | | |
| | G 5 | 91 | | | | | | | | | |
| | G#5 | 92 | | | | | | | | | |
| | A 5 | 93 | | | | | | | | | |
| | A#5 | 94 | | | | | | | | | |
| | B 5 | 95 | | | | | | | | | |
| | C 6 | 96 | | | | | | | | | |

OPTION DATA



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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 2 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 3 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 4 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 5 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 6 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 7 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 8 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 9 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 10 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 11 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 12 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 13 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 14 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 15 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 16 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 17 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 18 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 19 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 20 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 21 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 22 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 23 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 24 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 25 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 26 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 27 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 28 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 29 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 30 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 31 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |
| 32 | TYPE | | SUBMIX | A | B | C | D | E | F | G | H |
| | PARAM | 1 | PAN | | | | | | | | |
| | | 2 | SEND1 | | | | | | | | |
| | | 3 | SEND2 | | | | | | | | |

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Synthesizer
MODEL K4/K4r

# MIDI Implementation Chart

Date: Aug. 1989
Version: 1.0

| Function ... | | Transmitted | Recognized | Remarks |
|---|---|---|---|---|
| Basic | Default | 1—16 | 1—16 | Memorized |
| Channel | Changed | 1—16 | 1—16 | |
| Mode | Default | — | 1, 3 | Memorized |
| | Messages | X | OMNI ON/OFF | MONO ignored |
| | Altered | * * * | | |
| Note Number | : True Voice | 24—108<br>* * * | 0—127<br>0—127 | |
| Velocity | Note ON | * | * | |
| | Note OFF | * | * | |
| After Touch | Key's | X | X | |
| | Ch's | * | * | |
| Pitch Bender | | * | * | |
| Control Change | 1 | * | * | Modulation |
| | 7 | X | * | Volume |
| | 64 | * | * | Hold 1 |
| | 101, 101 | * (0, 1) | * (0, 1) | RPC |
| | 6 | * | * | Data entry |
| Prog Change | : True # | *<br>*** | *<br>0—127 | |
| System Exclusive | | * | * | |
| System Common | : Song Pos | X | X | |
| | : Song Sel | X | X | |
| | : Tune | X | X | |
| System Real Time | : Clock | X | X | |
| | : Commands | X | X | |
| Aux Messages | : Local ON/OFF | X | ○ | |
| | : All Notes OFF | ○ (123) | ○ (123~127) | |
| | : Active Sense | ○ | ○ | |
| | : Reset | X | X | |
| Notes | | * Can be set to ○ or X<br>Memorized even after turning off the power<br>RPC #0=Pitch Bender sensitivity<br>#1=Master fine tuning<br>Values are given by Data entry | | |

Mode 1 : OMNI ON, POLY
Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, POLY
Mode 4 : OMNI OFF, MONO

○ : Y
X : N

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# K4/K4r Specifications

| | |
|---|---|
| KEYBOARD (K4) | 61, WEIGHTED, w/Attack & Release Velocity and Aftertouch pressure |
| | (K4r: 2U rack-mounted digital synthesizer module) |
| SOUND SYSTEM | 16 Bit PCM & DC WAVES (TOTAL 256 WAVES) |
| MAX POLYPHONY | NORMAL:16, TWIN&DOUBLE:8 (32 SOURCES) |
| PROGRAM MEMORY | INTERNAL: 128 (64 SINGLE/64 MULTI) + 61 DRUM |
| | DC-16 MEMORY CARD: 128 (64 SINGLE/64 MULTI) + 61 DRUM |
| SINGLE EDIT | [EDIT] VOLUME, EFFECT PATCH (OUTPUT PATCH), SUBMIX CH, NAME |
| | [5 COMMON] SOURCE MODE, AM, POLY MODE, BENDER RANGE, PRESS > FREQ, WHEEL ASSIGN, DEPTH, AUTO BEND TIME, DEPTH, KS > TIME, VEL > DEPTH |
| | [13 LFO] VIBRATO SHAPE, SPEED, DEPTH, PRESS DEPTH, DCF-LFO SHAPE, SPEED, DELAY, DEPTH, PRESS DEPTH |
| | [6 S-COMMON] DELAY, VEL CURVE, KS CURVE, COPY |
| | [14 DCO] WAVE, KEY TRACK, COARSE (FINE), FIXED KEY, PRESS on off, VIB/A.BEND on off |
| | [7 DCA] LEVEL, ATTACK, DECAY, SUSTAIN, RELEASE |
| | [15 DCA MOD] VEL DEPTH, PRESS DEPTH, KS DEPTH, TIME MOD-VEL, RELEASE VEL, KS |
| | [8 DCF] CUTOFF, RESONANCE, VEL DEPTH, PRESS DEPTH, KS DEPTH, LFO |
| | [16 DCF MOD] ENV DEPTH, VEL DEPTH, ATTACK, DECAY, SUSTAIN, RELEASE, TIME MOD-VEL, RELEASE VEL, KS |
| MULTI EDIT | [EDIT] VOLUME, EFFECT PATCH (OUTPUT PATCH) NAME |
| | [A INST] SINGLE ASSIGN |
| | [B ZONE] ZONE LO, HI, VELOCITY SWITCH |
| | [C SEC ch] RCV CH, (K4: MODE) |
| | [D LEVEL] LEVEL, TRANS, TUNE, SUBMIX CH |
| DRUM EDIT | [DRUM] DRUM: (COMMON) VOLUME, RCV CH, VEL DEPTH (EACH KEY) KEY, WAVE S1, S2, DECAY S1, S2, TUNE S1, S2, LEVEL S1, S2, SUBMIX CH, COPY |
| EFFECT EDIT | [EFFECT] :K4 [OUTPUT] :K4r TYPE, PARAMETER 1, 2, 3, SUBMIX CH EDIT, PAN, SEND 1, 2 |
| SYSTEM | [SYSTEM] SUBMIX CH EDIT, PAN/INDIV. |
| | SYS: TUNE, TRANSPOSE, LOCAL, VEL SW POINT, LINK 1-8 |
| | TRS: CHANNEL, PGM, (K4: PRS, BEND, MOD, HOLD, VEL) |
| | RCV: CHANNEL, OMNI, PGM, PRS, BEND, MOD, VOL, HOLD, VEL, EXCLUSIVE |
| WRITE/DUMP | [WRITE DUMP] WRITE, DATA DUMP, INT PROTECT, CARD PROTECT SAVE/LOAD, CARD FORMAT |
| FRONT AND REAR PANEL CONTROLS & jacks | VOLUME, PATCH SELECT SW, DRUM SW, EFFECT SW (K4r: OUTPUT), (K4: WHEEL X 2) WRITE SW, POWER SW, DC IN, OUTPUT STEREO L/R (MONO) (K4r: +1–6), PHONE jack, CARD SLOT, MIDI IN/OUT/THRU |
| DISPLAY | 16 x 2 LCD backlit |
| DIMENSIONS (mm) | K4: 1020 (W) x 310.8 (D) x 88.5 (H), K4r: 483 (W) x 218.5 (D) x 88 (H) |
| WEIGHT | K4: 7.3 kg, K4r: 2.8 kg |
| POWER CONSUMPTION | K4: 5.8 W, K4r: 6.8 W |



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